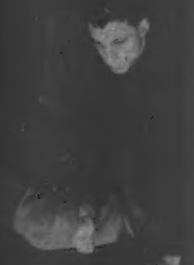
September 1961

SCHOOL MANAGEMENT

PRACTICAL SOLUTIONS TO SCHOOL MANAGEMENT PROBLEMS

Education Library

TRENDS IN SCIENCE FACILITIES



- How to plan science laboratories
- How to purchase science equipment
- Could your district use semi-micro equipment?
- What are the new curriculums?
- How to get aid from industry
- Where your district can get help

Winners of the First Annual *School Public Relations Awards*

HOW TO HIRE THE RIGHT ARCHITECT

SEE COMPLETE CONTENTS ON PAGE 2

Another Improvement First

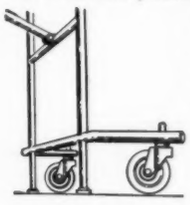
In Benchless Roll-Away Folding Tables

NEW LOK-STEADY LEG DESIGN GIVES ROCK-LIKE STABILITY TO TABLES...AUTOMATICALLY!

Gentlemen: It was my pleasure to announce to you a short time ago our new Uniframe method of construction. This development was enthusiastically received, and some of our competitors immediately paid us a supreme compliment, imitation.

Now I am pleased to bring to your attention another new improvement, Lok-Steady leg construction. Our first application of this new technique has been on our benchless roll-away folding tables.

You may be familiar with the fact that previously there was one serious difficulty with roll-away folding tables—even after unfolding, they tended to "roll-away." This was because the wheel-equipped legs were designed to rest on their wheels after unfolding. Rolling was inevitable. With Lok-Steady construction, this problem is eliminated forever.



Lok-Steady legs do have wheels, naturally, but they have also retractable rubber-tipped steel feet. These feet are linked to the folding mechanism. When the table is unfolded, the feet automatically extend until, when the table is fully unfolded, the casters are raised from the floor completely.

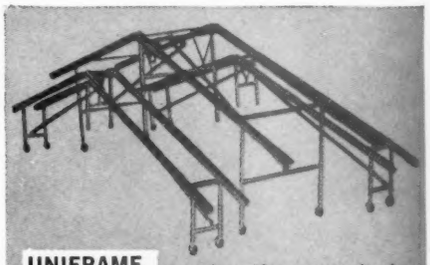
Resting on the extended feet, the table has rock-like stability. When folded, it has all the easy portability you have come to expect from Smith System roll-away equipment.

Just a final word about Lok-Steady leg construction: It is exceedingly simple, requires no maintenance of any kind, and is entirely automatic. And both the folding and unfolding can be handled by students because we have also incorporated powerful torsion bars into the folding mechanism.

These tables are finished with beautiful plastic tops and bright-plated metal parts, for a lifetime of satisfactory use.

Yet, I am happy to report, Smith System benchless roll-away folding tables are a most economical purchase. Economical in terms of first cost, and in terms of useful life. When you compare them to any others now available, you will find that you simply cannot make a wiser choice.

If you would like additional information about these remarkable new tables, we will be pleased to have a representative call—or send you literature. Of course there is absolutely no obligation. Why not write us today!



UNIFRAME construction uses techniques developed in aircraft manufacture. With it, working surfaces of tables, etc., are not used for structural support – the welded tubular steel frame will actually stand by itself! This means the frame absorbs stresses, does not transmit them to points of attachment. Insures longer table life, more stability in use.

Yours sincerely,
Newell V. Risdall, *Sales Manager*

Smith System

MANUFACTURING COMPANY

Tubular Products Division
212 Ontario Street S.E.
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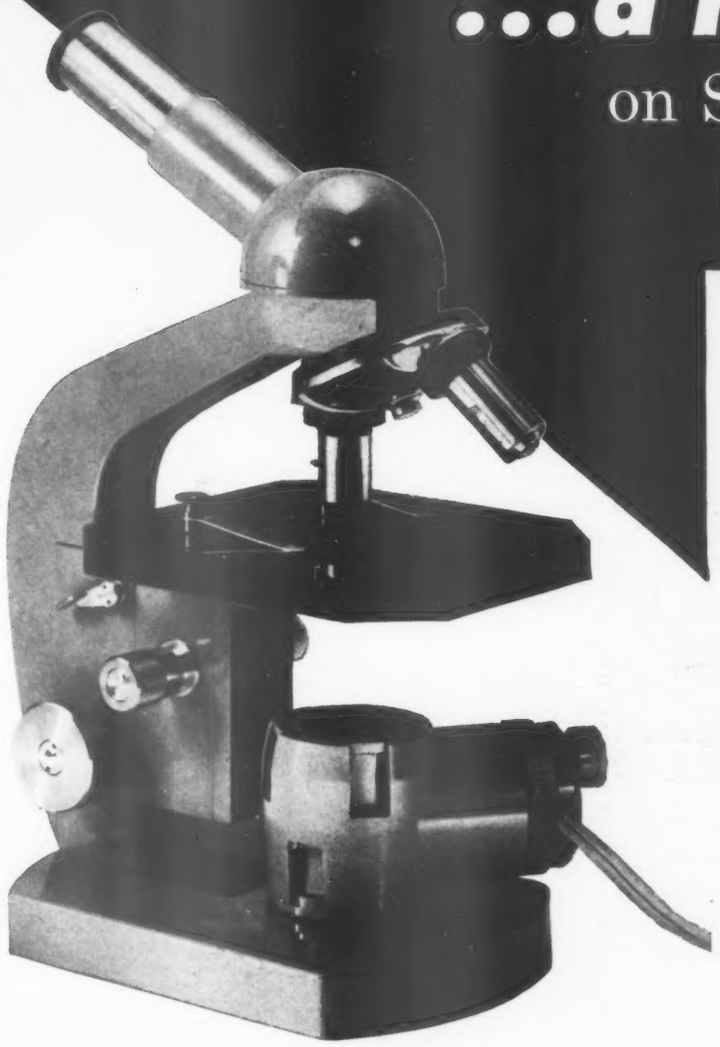
(Circle number 750 for more information)

Elgeet of Rochester... *Presents:*

...a new slant on Student-Teaching microscopes



Science means progress, and to help both teachers and students meet the challenge of a changing world, Elgeet presents a superb new microscope with research instrument features never before offered in student-teaching models!

The inclined eyepiece is typical of the many new features, extending to students the benefits of unsurpassed convenience, ease of operation, and efficiency combined with working comfort, resulting in maximum learning possibilities even over prolonged periods of close concentration.

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Pictured standard model S-2 with double revolving nosepiece with hard-coated parfocal, achromatic interchangeable 10× (N.A. .25) and 40× (N.A. .65) objectives. Built-in revolving aperture disk to control illumination. 10× Huygenian coated lens eyepiece. Choice of concave mirror or interchangeable 20 watt illuminator (Model LSK) as shown.

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(Circle number 722 for more information)

SCHOOL MANAGEMENT

September 1961

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How to hire the "right" architect for your district 64
Planning to build a school? Selecting the proper architect is the foundation of the whole project. Here's how one district hired the "right" architect for its new school.

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Better ways to teach all the sciences are now being developed. Here's what the new courses look like.

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Where to get help for your district 95
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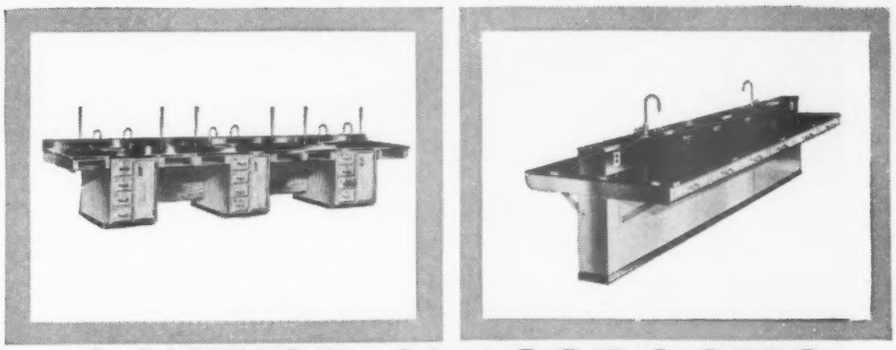

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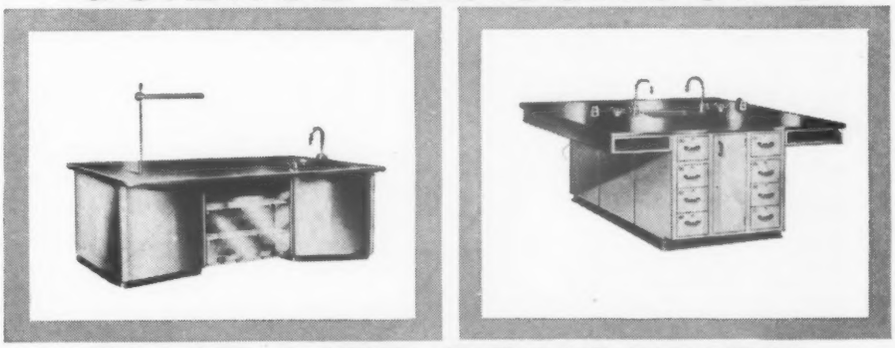
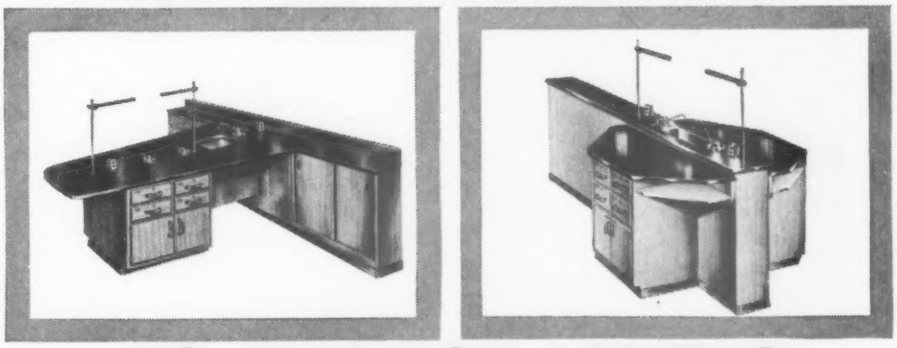
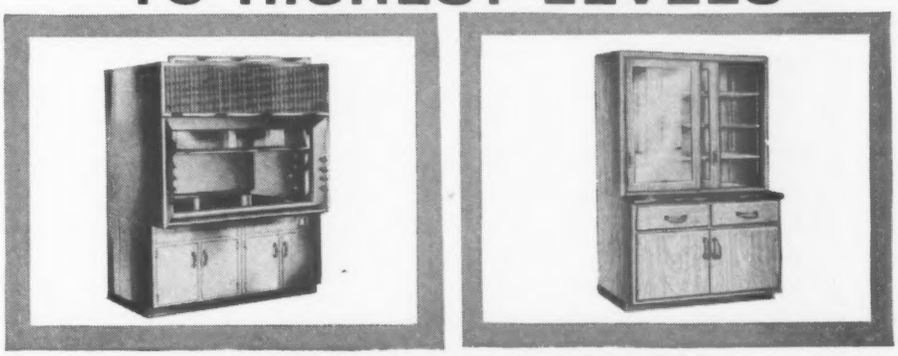


THAT LIFT EDUCATION



TO HIGHEST LEVELS



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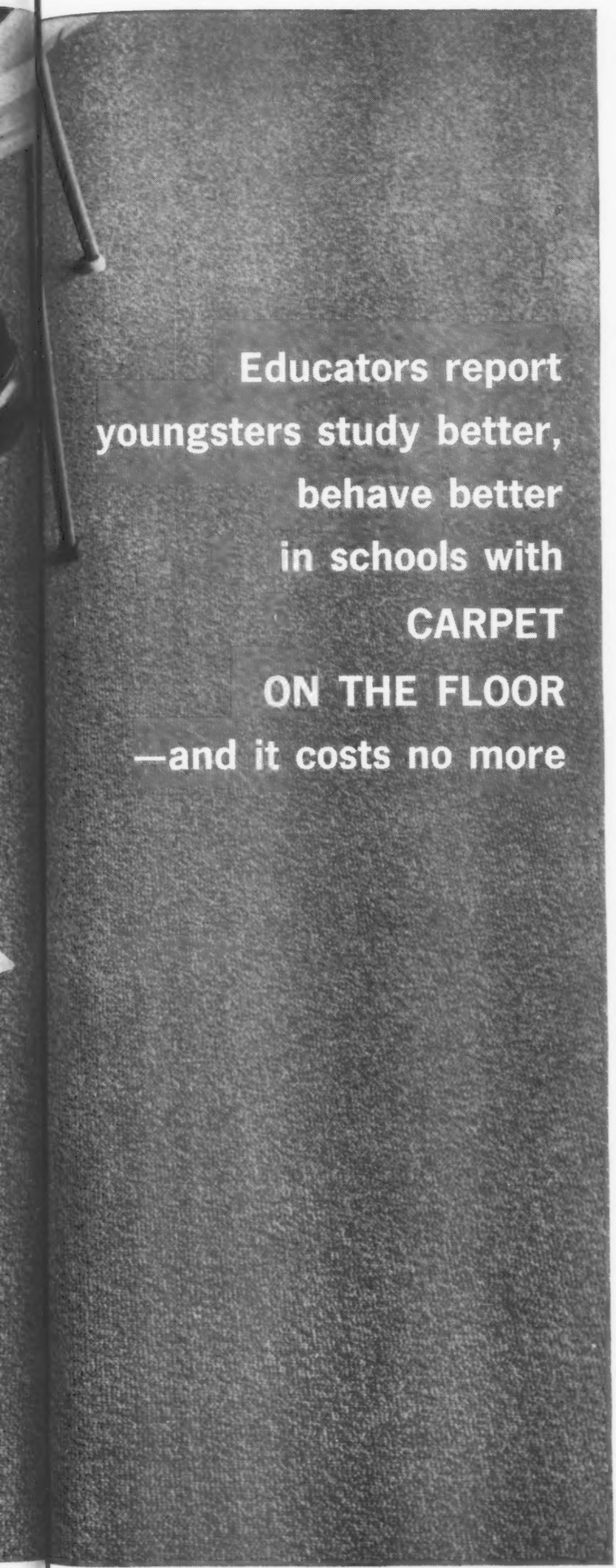

LEES CARPETS ...THE ACOUSTICAL FLOORING

Based on carpeting tested in classrooms and corridors in the South, Midwest and East, educators report that with quiet carpet underfoot, study habits improve; with soft carpet underfoot, discipline improves; with the homelike feeling of carpet underfoot, manners improve. Concentration is keener, voices lower, disruptive noises fewer, rapport closer between students and teachers.

The learning-teaching benefits are matched by long-range economy. In the long run, including replacement, carpeted floors cost no more than hard-surface flooring. You pay a bit more for carpet initially, but maintenance-costs are less than half those for hard-surface floors.

We at Lees are happy to be part of this new kind of educational thinking. We have developed a special group of exceptionally durable carpets that meet school requirements and budgets. And we have factual data that will be of tremendous help to you in your plans for new plants or replacements. Just mail this coupon today.

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My position_____

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City_____ Zone____ State_____

Name of school_____

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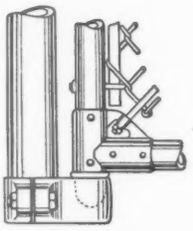
WHY DOES CYCLONE SET A GATE POST CROOKED?

The strongest fence post will give a little when you hang a heavy gate on it. To compensate for this, expert Cyclone crewmen set the gate post slightly off plumb. When the gate is hung, its weight pulls the post into line.

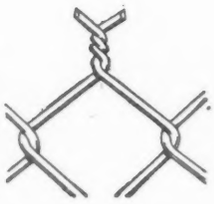


Cyclone gates are made with sleeve construction: remove a few rivets, insert a new part and you have a new gate. Most fence gates are welded; smack one with a car or truck and you have to burn off the damaged section and weld on a new one. It's a major rebuilding job.

Cyclone gates also have adjustable truss rods to true them up. Most welded gates don't. We say Cyclone gates **never** sag, and they don't.

That's not all.

Cyclone uniformly galvanized



Some chain link fence is galvanized before weaving. Twisting, turning and bending by weaving machines may break the seal of zinc; leave uncoated ends to invite corrosion.

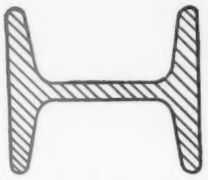
USS Cyclone Fence is galvanized **after** weaving. With the Galv-After process, developed by Cyclone, none of the protective zinc is removed from Cyclone chain link after it leaves our hot-dip tanks. This adds years to fence life.

Every part engineered to job

Take the 4″ piece of wire we use to fasten fence fabric to line posts. It's about the smallest thing that goes into a Cyclone fence, yet we've gone to the trouble of pre-shaping it into a clip. The clip makes a neater, tighter job and helps us get your fence up faster. This can save you money.

For safety, dependability, economy

H-Post for strength



The Cyclone H-Post is solid steel covered with a heavy coat of zinc. It's designed like a beam for extra strength. Its flange and web make a better bond with concrete than the round type of line post. There's no inside surface to corrode; all surfaces are exposed and zinc-protected. The H-Post won't crimp if something rams it. You have to twist it first, then bend it to put it down. If it does go down, you can straighten it with heat.

69 Cyclone branches

Cyclone has 69 branch offices around the country. Which means, wherever you are, we're reasonably close by. Our representatives know the fence business, they know the "how" of writing solid fence specifications. They'll be happy to sit down with you anytime to help you develop a set of airtight specifications, which, if followed to the letter, will guarantee a first class fence job.

Know the brand

Cyclone is the largest manufacturer of chain link fence in the world, and one of the oldest. We've been in business 74 years. Cyclone is *not* a type of fence, it's the name of **one particular brand of fence.** The only company that makes USS Cyclone Fence is the American Steel and Wire Division of United States Steel. And the only people who sell it are the 69 USS Cyclone Branch Offices around the country.

USS and Cyclone are registered trademarks

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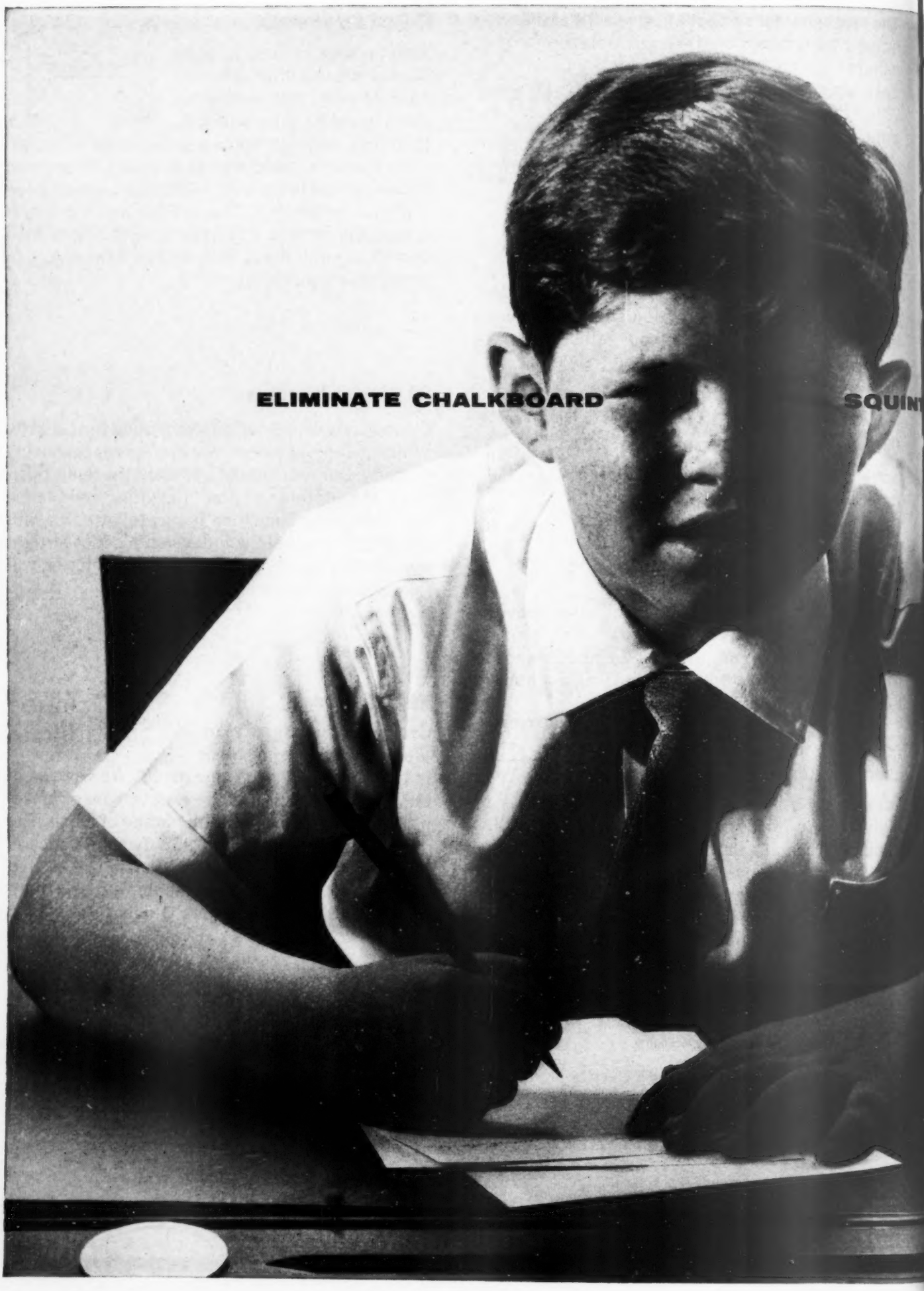
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Now you can provide classrooms with strong, durable, beautiful chalkboards that are truly easy on the eyes. With Johns-Manville Colorlith, you get uniform texture, minute pore structure and pleasing shades to eliminate the three major causes of poor chalkboard visibility: chalk build-up, low visual contrast and harsh colors.

Colorlith is a dense, homogeneous sheet that provides a smooth, hard-writing surface that is extremely easy to clean. Because its minute pores cannot fill with chalk particles, dust build-up is cut to a minimum. This means infrequent washings, too! Colorlith's asbestos-cement structure takes chalk easily, thus permitting full, unbroken lines for easy readability. And, Colorlith is available in three eye-pleasing colors—Spruce Green, Cameo Brown and Charcoal Gray. Extensive research and testing have proved these colors the most restful to the eyes.

Because of its unique composition, Colorlith retains its excellent properties over the years. For full details on this high-quality chalkboard, write to J. B. Jobe, V.P., Johns-Manville, Box 14, New York 16, N. Y. In Canada: Port Credit, Ontario. Cable address: Johnmanvil.

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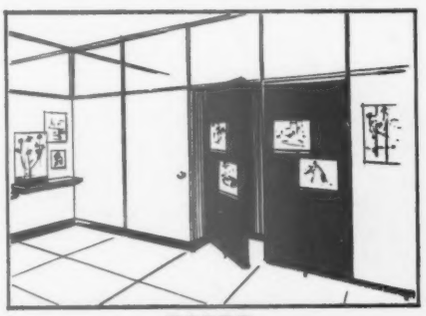
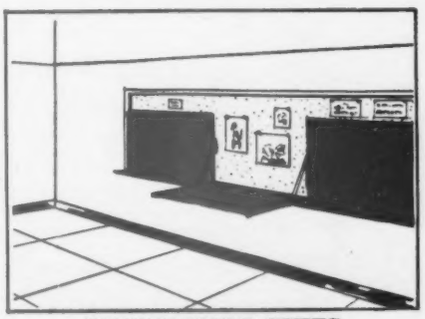
PARTITIONS



DOORS

WARDROBES



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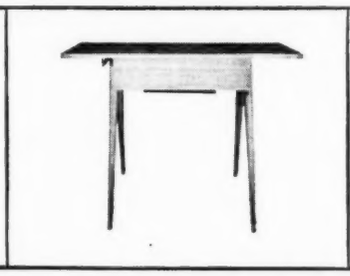

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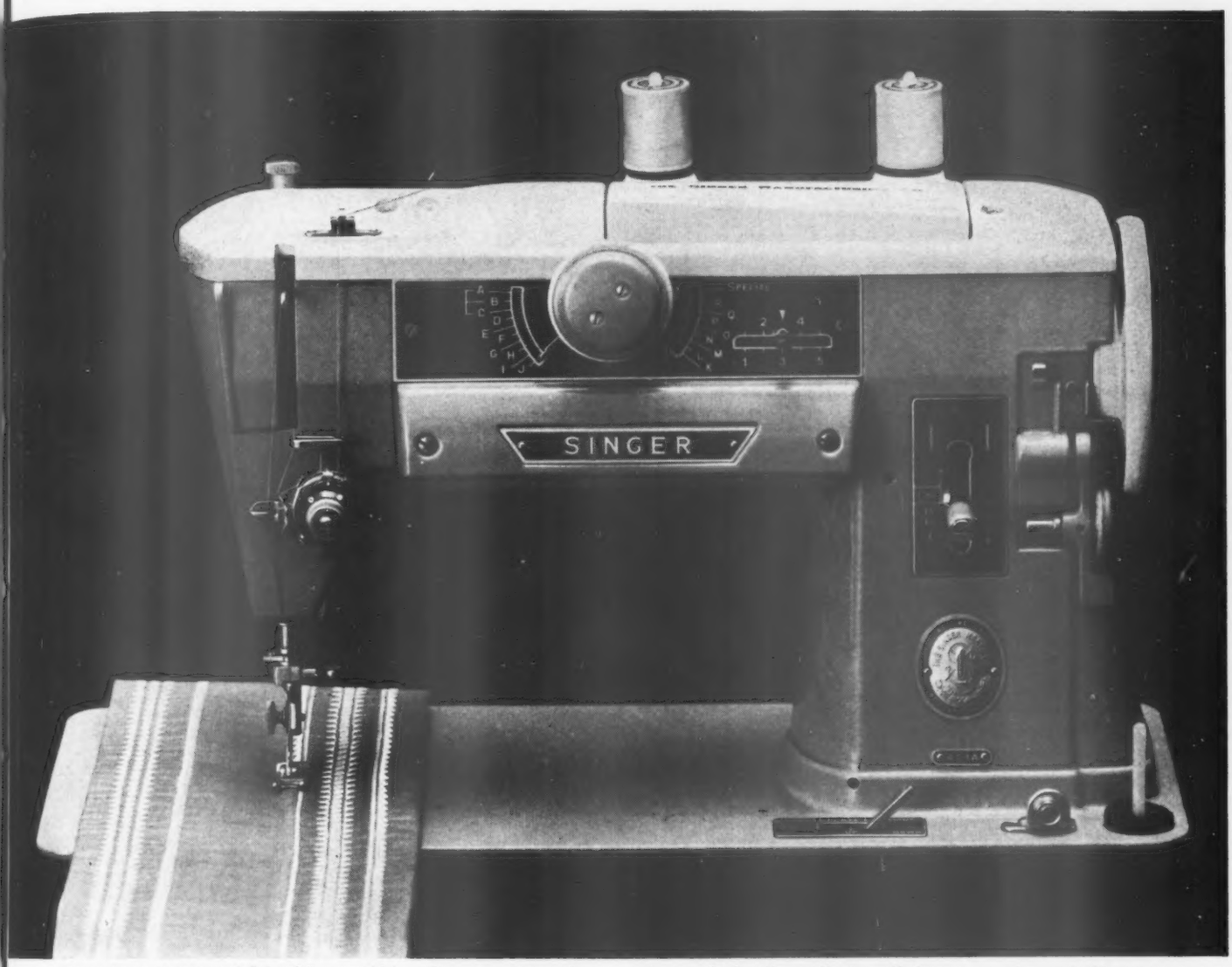
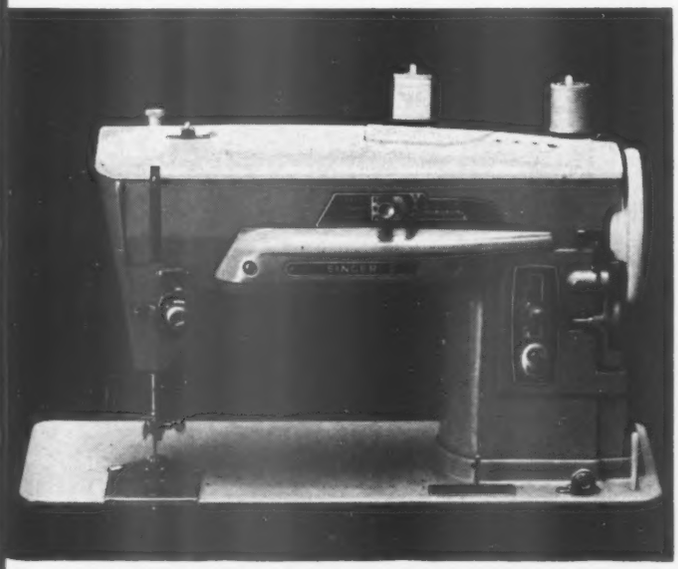
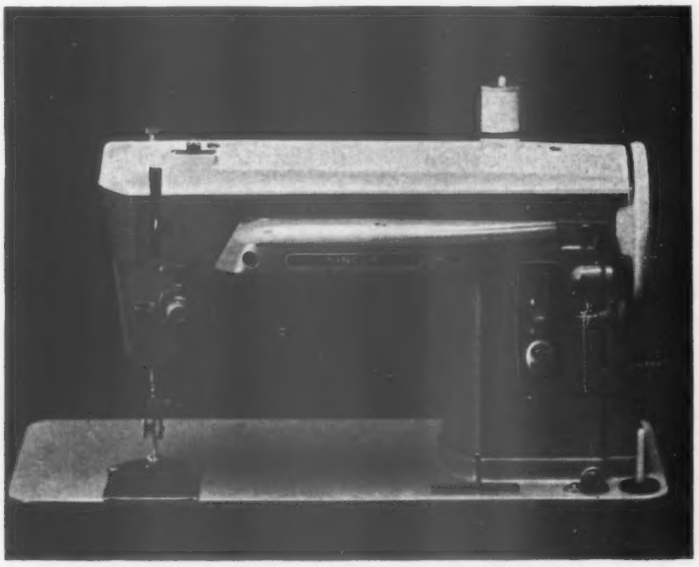


SLANT-O-MATIC* Machine #401...finest automatic zigzag machine ever built. Best suited to classroom use. Easiest to operate . . . time-saving and decorative zigzag stitches are *built-in* . . . flip up stitch chart, select stitch, "tune" the dial . . . and sew! Zigzag mechanism disengages for flawless straight stitching. Drop-in front bobbin, fixed bobbin case—as in all Slant-Needle Series machines.



SLANT-O-MATIC SPECIAL Machine #403 . . . gear-motor drive for straight and automatic decorative zigzag stitching with FASHION* Discs. Exclusive SINGER slant-needle offers the operator better vision.



SINGER* Slant-Needle Deluxe Machine #404 . . . finest straight-stitching machine built! Gear-motor drive for no-stall stitching on any type of fabric. Lever raises throat plate for darning and embroidering.

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This material—promotional and otherwise—contains ideas of possible value to you and your schools. Each item listed will be sent to you without cost.

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Glass for sash. A 12-page brochure published by the Kimble Glass Co. explains the advantages of replacing window sashes with glass blocks. Buildings where worn or unsightly window sashes have been replaced with glass blocks are said to have reduced heat loss, in addition to improving appearance. One page of the brochure explains how to install a glass block.

For a free copy of this brochure, circle number 898 on the Reader Service Card.

Science lab furniture. Semi-micro science facilities, laboratory sinks, service fixtures and other laboratory facilities are listed in a catalog being distributed by the Kewaunee Technical Furniture Co. Dimension drawings and specifications are included as an aid in planning laboratories.

For a free copy of this catalog, circle number 865 on the Reader Service Card.

Wide-screen audio-visuals. Audio-visual techniques can be more than just a way of illustrating lectures, according to this booklet from the Eastman Kodak Co. Schools can make use of wide-screen and multiple-screen projections to make classes more interesting and informative. The booklet explains methods of producing both effects and suggests some applications.

For a free copy of this booklet, circle number 867 on the Reader Service Card.

Lab, classroom cabinets. On-site assembly of cabinets from Harmon Cabinets, Inc. gives a school district three marked advantages: reduced freight costs, ease of replacement of damaged parts, and delivery of a stronger cabinet because ruptured joints are eliminated. A catalog published by the firm describes its line of lab and classroom cabinets, which can also be factory-assembled if desired.

For a free copy of this catalog, circle number 895 on the Reader Service Card.

Utility vehicles. Cushman Motors has publihsed a catalog that illustrates and describes its 1962 line of three-wheel utility vehicles. These vehicles are powered with gasoline engines or batteries, and come in a variety of body styles for many purposes, including passenger transportation.

For a free copy of this catalog, circle number 881 on the Reader Service Card.

Locker designs. A 28-page colorfully illustrated catalog published by Worley & Co. lists many ideas in lockers, locker design, combination box and dressing lockers, basket lockers, and construction features of each. One section, titled "How To Plan Your Locker Requirements," explains the preparation of a floor plan for the locker area and takes you step-by-step through purchase and installation.

For a free copy of this catalog, circle number 903 on the Reader Service Card.

Using a copy machine. Minnesota Mining and Manufacturing Co. has compiled a 27-page booklet showing how a copy machine may be used to simplify, speed and improve school and administrative communications. The booklet tells how to make transparencies for overhead projectors, how to handle correspondence quickly, how to prepare address labels, how to make paper masters for offset printing. Copy machines, according to case histories in the booklet, can be used economically in class as well as in the school office.

For a free copy, circle number 902 on the Reader Service Card.

Area lighting made easy. Here's a 16-page brochure which quickly tells how much and what kind of lighting to use for illuminating parking lots, practice fields, and other open areas. Published by the Crouse-Hinds Co., the brochure includes foot-candle charts and installation diagrams plus a listing of floodlights and mounting accessories.

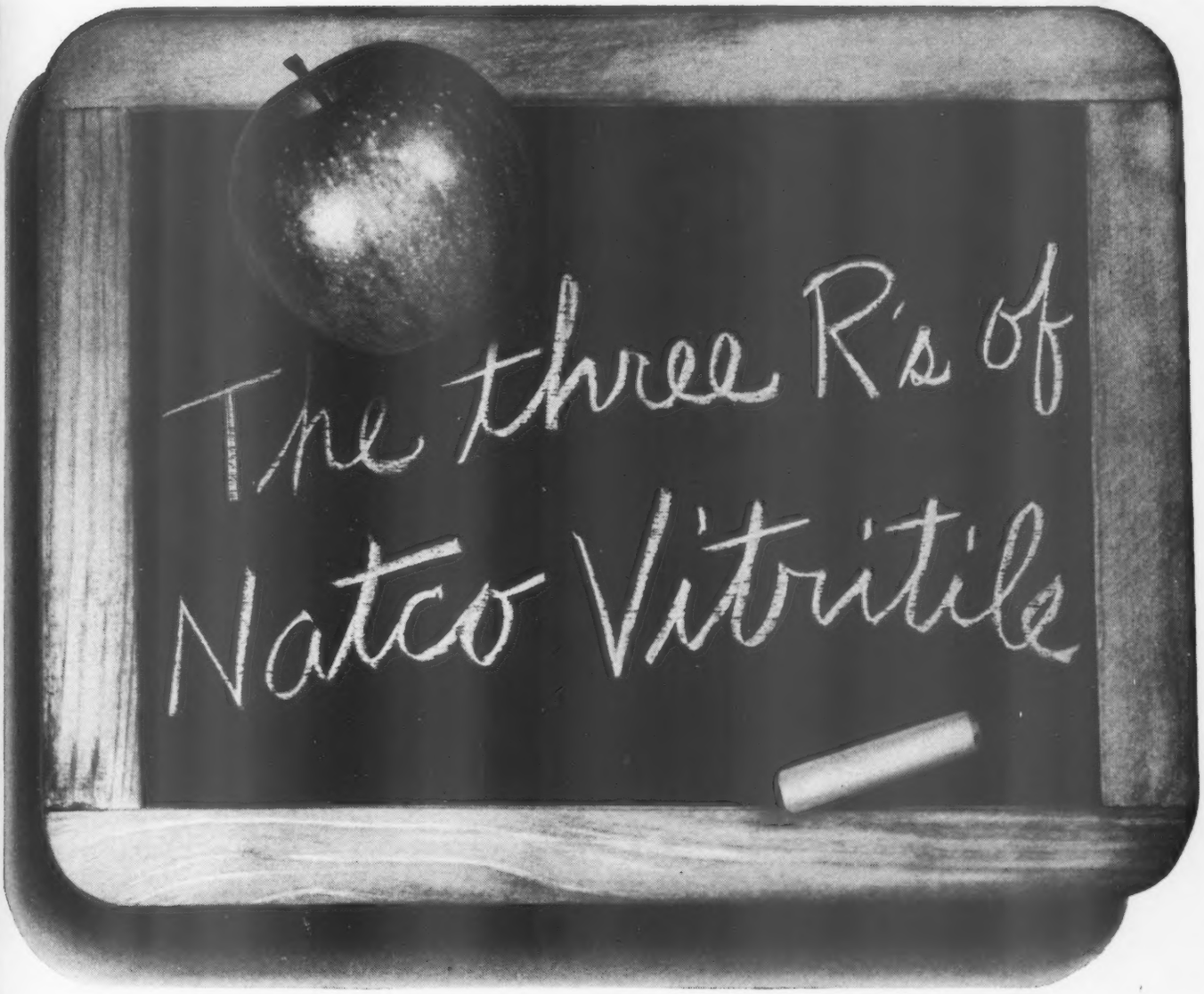
For a free copy, circle number 850 on the Reader Service Card.

How to select colors. The Tropical Paint Co. is distributing a mimeographed handbook of information on how to select paint colors for various rooms, stairwells, swimming pools, gymnasiums, etc. The booklet emphasizes that in most cases, personal preference for colors should not be a consideration in selection. The booklet has information on chemical resistant paints for lab furniture, and heavy duty paints for such furniture as desks and chairs.

For a free copy of this booklet, circle number 863 on the Reader Service Card.

Spectator seating. A four-page illustrated folder from the Berlin Chapman Co. describes the firm's line of mechanical folding bleachers, folding chair stands, mobile bleachers, grandstands and portable bleachers. The

text continued on page 134



Radiant

Natco Vitritile is available in a variety of attractive, radiant colors. All colors are permanent and will not fade. A periodic cleansing with common soap and water is all that's necessary to **maintain** Vitritile's original radiance.

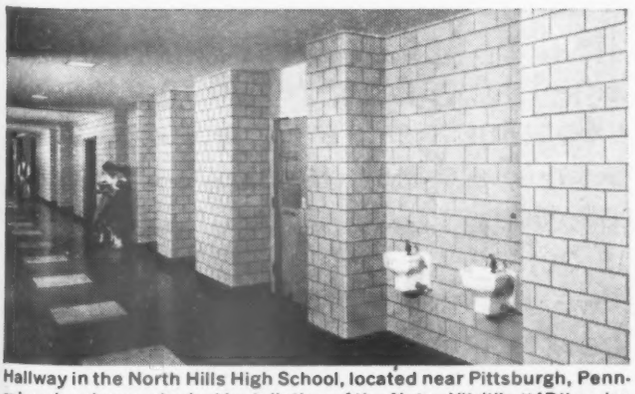
Resistant

Vitritile—a ceramic glazed structural clay facing tile—is resistant to moisture, fire, chemicals, dirt and scuffs. Interior walls of smooth Natco Vitritile resist the day by day wear and tear that only school children can administer.

Reliable

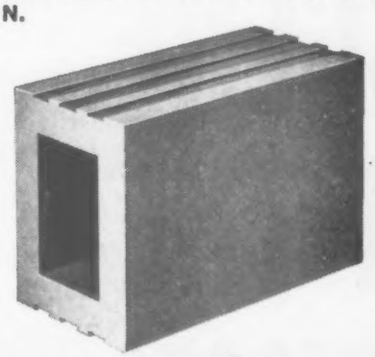
Install it and forget it! Vitritile's permanent, hard-fired finish assures years and years of maintenance-free service. Because it is a **genuine** clay tile product Vitritile will last the life of any school in which it is installed.

If you're building a new school or adding to an existing school it will be to your best interests to consider Natco Vitritile. For complete information write for catalog #S-61 N.



Hallway in the North Hills High School, located near Pittsburgh, Pennsylvania, shows a typical installation of the Natco Vitritile "4D" series (5 1/16" x 7 3/4" face size).

Vitritile is available in many shapes and sizes. Including the large 8W series (7 3/4" x 15 3/4" face size) and the popular 6T series (5 1/16" x 11 3/4" face size) available in nominal 2", 4", 6" and 8" thicknesses.



Natco Corporation

General Offices: 327 Fifth Avenue, Pittsburgh 22, Pa. Other Branch Sales Offices: Boston, Chicago, Detroit, Houston, New York, Philadelphia, Pittsburgh, Syracuse, Birmingham, Ala., Brazil, Ind. In Canada: Natco Clay Products Ltd., 57 Bloor St., W., Toronto.

(Circle number 737 for more information)

SCENE OF THE CRIME!

What these kids are doing to this floor is murder! Maybe the police wouldn't call it murder. But to the custodian, the school board and the taxpayer, these kids are killing its beauty—taking away its life. And what's happening to this floor is the same thing that can happen to your floor—any floor. Preventing floor murder is the job of Johnson's Wax Crime lab. Our special "field-test" investigators make every new floor maintenance product prove itself under actual in-use conditions before we O.K. it for sale. For example, months ago we began testing a new kind of finish in schools. This new finish combined natural waxes with polymers. As our investigators observed its perform-

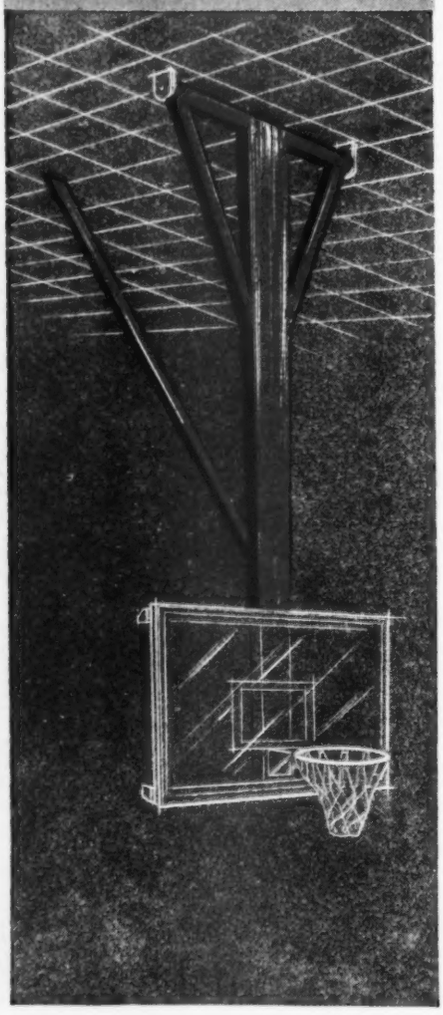
ance underfoot, they suggested changes in the product to make it tougher, safer and easier to maintain. This June, when the tests were completed, we introduced the product as WAXTRA! And we knew for certain we had a new finish that gave a better combination of protection, safety, and gloss than straight wax or straight polymer products. Today WAXTRA! is the hottest new maintenance product in the entire country. The field testing that helped perfect WAXTRA! is routine at Johnson's, because we won't put out a product until we've proved to ourselves that it's the best we can make.

JOHNSON'S WAX . . . THE PEOPLE WHO TAKE A LONG HARD LOOK AT YOUR MAINTENANCE PROBLEMS—and SOLVE THEM

(If you haven't tried WAXTRA! yet, write us for the name of your nearest Johnson's distributor. We'll also send you further information without obligation. Write to: "WAXTRA!", S. C. Johnson & Son, Inc., Box SM9, Racine, Wis.) © S. C. Johnson & Son, Inc., Racine, Wis.

(Circle number 762 for more information)

NEW FROM PORTER



NEW "LINE 100"

Now — clean, functional basketball backstop design . . . rigid construction . . . dependable remote operation. And it's from Porter . . . over 150,000 backstop installations . . . 50 years of experience in making backstops. For complete information on Porter's New 100 Line, our Deluxe 200 Line and new Economy 300 line, write today for new Basketball Catalog.

PORTER
ATHLETIC EQUIPMENT COMPANY
9555 IRVING PARK ROAD
SCHILLER PARK 2, ILLINOIS
(Circle number 729 for more information)

SM LETTERS

A sampling of correspondence across the editor's desk

Too much sun?

SIR: Re: article, "Getting away from the rectangular classroom—II" (*see SM, May '61*).

Two questions for principal Mack:

1. Do you and your school community believe in the use of the modern tools of teaching?

2. What provisions have you made in the Tinicum Elementary School to encourage teachers to use modern tools?

Comment: It appears to me that the use of projected materials in the classrooms would be almost impossible as it now stands.

One question for architect Gregory:

Did it not occur to you that glare would be a problem with so much glass area, especially with the glassed gable ends?

Comment: It seems so self-evident that one wonders how it could have been overlooked. And tinted glass is no solution.

Further comment: The triangle shape is real "cool," but the mass of glass burns me. It seems an inexcusable blunder, architecturally and educationally.

The architect can be excused for making educational blunders. The educators—no!

What can be done for glass-happy architects (and educators)?

Are errors that almost surely reduce the educational opportunities of some of our children to be excused on the grounds of "local choice"?

To steal a speech title from an acquaintance of mine, "Always somebody don't get the word." Would that educators worked harder at getting the latest word and acting upon it.

Final comment: This school in any other shape would still be obsolete, I think.

WILLIAM F. DANIELS
AUDIO-VISUAL COORDINATOR
LAKE COUNTY, IND.

■ *The replies of Mr Mack and Mr. Gregory follow.* ED

The seven teachers in the Tinicum Elementary School make use of audio and visual aids in classroom instruction. Visual aid equipment available to them in the building includes a film projector, strip film and slide projectors, and an overhead projector. Audio aids include a tape recorder and seven record players.

Regular use of the county film library keeps the teachers supplied with educational films and other visual materials to supplement class instruction. Films are delivered once a week from the county service center.

I think it is fair to say that our teachers make—and are encouraged to make—full use of audio-visual aids.

MELVIN G. MACK

We are entertained by the reflections of Mr. Daniels.

I gather that he is talking about 1) glare, and 2) use of the classrooms for audio-visual work.

As I said in the interview, glare is no problem since the lower portions of the glass are controlled by venetian blinds and the upper portions by the tinted glass and the overhang.

The rooms are very well suited for audio-visual work since, with blackout blinds on the lower portions of the wall, the general level of natural illumination can be reduced to five foot-candles with brilliant sunshine outside. This is the usually recommended minimum level for screen projection. It has long been recognized that total darkness is not desirable due to the fatiguing result of high brilliance contrast between the image and its surroundings.

JULES GREGORY

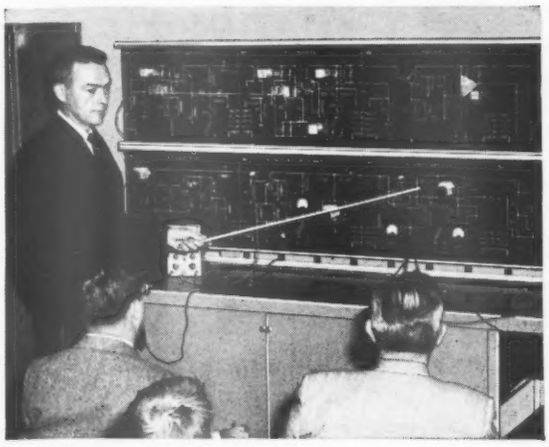
Durable tapes

SIR: There appears to be one discrepancy in your otherwise excellent résumé of language laboratories *(see SM, June '61).*

It is stated that tapes frequently wear out. Virtually all users have found that tape is the longest wearing and most durable material now in use as a medium of sound reproduction. In a recent test the IBM Corporation subjected a sample of common magnetic tape to 10,000 successive playings and found no perceptible wear or deterioration in the recorded material. (Recorder heads do show wear, however, and must eventually be replaced.)

Tape can, of course, be physically damaged by careless use. To guard against this a school can take either

text continued on page 26



Demonstration by instructor

RCA IN-SCHOOL ELECTRONIC TRAINING PROGRAMS

...more effective teaching (and learning) of electronic theory and practice!

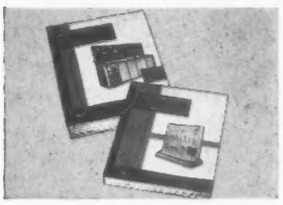
Application by student

The purpose of RCA Electronic Training Programs is to make the concept of electronics *real* to students in the shortest possible time through practical, "learn by doing" demonstrations.

With the RCA Instructor's Demonstrator and Transistor Trainer, fundamental electronic systems are actually displayed, built and demonstrated, circuit by circuit, to provide greatly simplified instruction and better student understanding. RCA Student Laboratory units permit the student to learn electronics by practical application utilizing the knowledge gained from the instructor's demonstration. He learns logically, step by step, the techniques of electronic circuit analysis and troubleshooting.

For the most value in electronic training programs and equipment, look to the most trusted name in electronics. RCA offers complete program back-up with special equipment and advisory service to meet academic, vocational and trade school requirements.

COMPLETE PROGRAM SUPPORT



Training manuals—written guides for instructors and students provided with each RCA training package.

Transistor trainer—valuable training for students in latest transistor theory and circuits.

Curriculum guide—comprehensive aid to educators in developing and coordinating electronic training programs with academic learning.

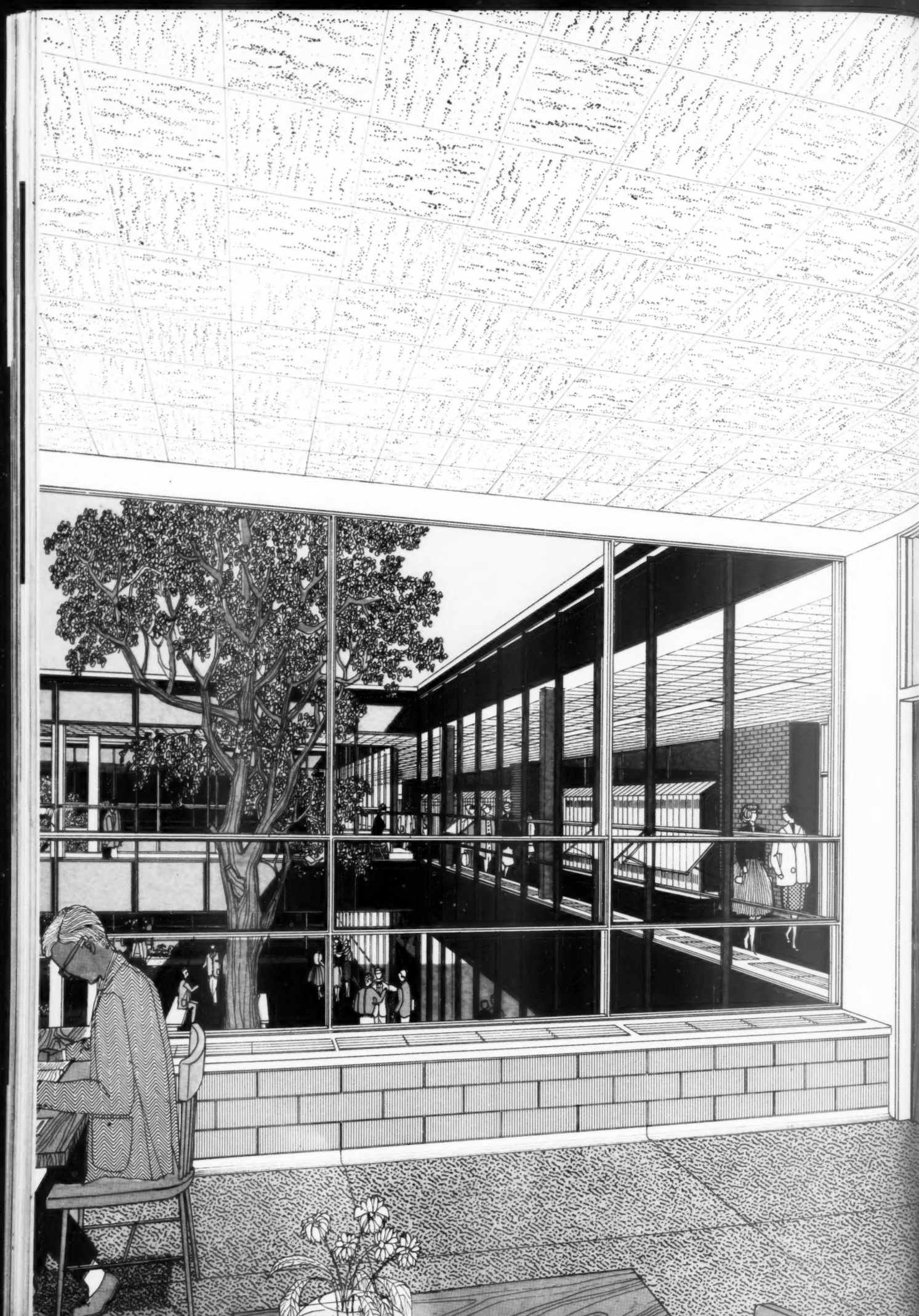
THE NATIONAL DEFENSE EDUCATION ACT offers you an ideal opportunity to secure RCA Electronic Training Equipment for your school. For free brochure write RCA Educational Electronic Products, Meadow Lands, Pa.

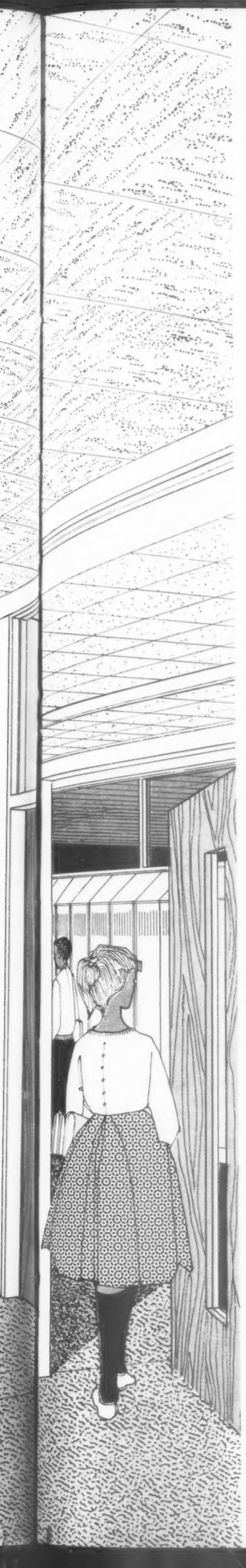
RCA®

The Most Trusted Name in Electronics

RADIO CORPORATION OF AMERICA

(Circle number 766 for more information)





How Armstrong Acoustical Fire Guard cut ceiling costs on this Ohio school by 53¢ a square foot. Saved: $56,069

ON THE LEFT you see a Helmut Jacoby rendering of the new Valley Forge High School, Parma Heights, Ohio. To meet the specifications of Architects Fulton, Dela Motte, Larson, Nassau & Associates, of Cleveland, ceilings in the school had to perform two major functions —provide acoustical treatment and meet a two-hour fire code requirement.

Specifications called for Armstrong Acoustical Fire Guard or an alternative of acoustical tile cemented to plaster. The firm which was awarded the contract submitted a bid showing that Acoustical Fire Guard would cost $56,069 *less* than the alternate. This represented a saving of 53¢ per square foot since 105,000 square feet of Acoustical Fire Guard ceilings were specified.

Widest Range of Time-Design Ratings

Acoustical Fire Guard, available in both 12 x 12 inch tile and 24 x 48 inch lay-in units, offers you more than significant savings like this. To date, eleven different floor and ceiling assemblies incorporating Acoustical Fire Guard ceilings have been tested at Underwriters' Laboratories, Inc. Ratings of from one to four hours are available within these eleven assemblies. Therefore, Fire Guard offers you the widest available range of UL time-design ratings for fire-retardant acoustical tile and lay-in ceiling systems.

Accepted by Code Authorities

The variety of floor-and-ceiling assemblies, incorporating Acoustical Fire Guard ceilings, will suit most forms of construction. This gives you more flexibility in the selection of UL rated fire-retardant acoustical ceilings. Since Acoustical Fire Guard has been meeting rigid fire code requirements across the nation for more than two years, it is widely recognized by local fire code authorities.

Also, Acoustical Fire Guard tile and lay-in units can be combined effectively in different areas of the same project. This is because both offer the popular Fissured and Classic surface patterns. And the factory-finished surface requires no painting and a minimum of maintenance.

Phone Your Armstrong Acoustical Contractor

From one construction project after another comes proof that Armstrong Acoustical Fire Guard can sharply reduce your ceiling construction costs. To learn more about how Acoustical Fire Guard will meet your design requirements, and at the same time save money, call your Armstrong Acoustical Contractor (he's in the Yellow Pages under "Acoustical Ceilings"), your nearest Armstrong District Office, or write to Armstrong Cork Company, 4209 Ross Street, Lancaster, Pa.

Here are 9 Acoustical Fire Guard UL ratings most frequently used to meet fire code requirements

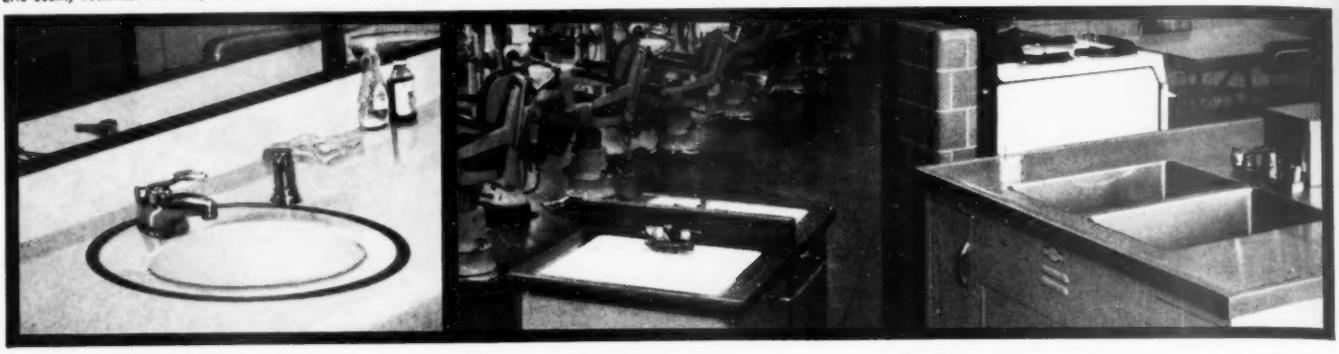
FIRE GUARD LAY-IN		FIRE GUARD TILE	
Floor & Ceiling Design	Rating	Floor & Ceiling Design	Rating
#30	2-hr. (Beam—3-hr.)	#31	4-hr.
		#21	4-hr.
#13	2-hr. (Beam—3-hr.)	#8	2-hr.
		#7	1½-hr.
#21	2-hr.	#9	1-hr.
#8	1½-hr.		

Armstrong ACOUSTICAL CEILINGS

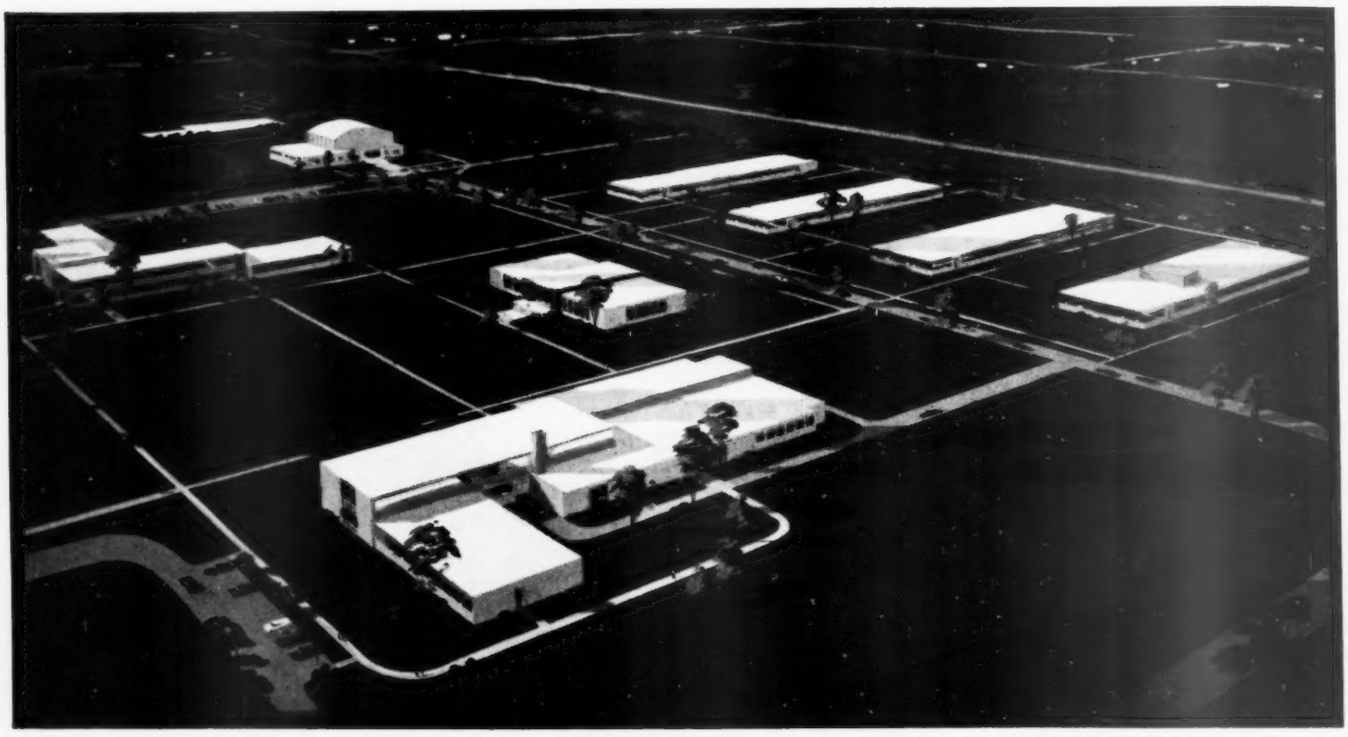
First in fire-retardant acoustical ceilings

Superintendent of Schools for Parma: Mr. Paul W. Briggs
Architect: Fulton, Dela Motte, Larson, Nassau & Associates, Cleveland
General Contractor: H. J. Forepaugh and Son, Bedford, Ohio
Acoustical Contractor: The Gellin Company, Cleveland

Erie County Technical Institute, Buffalo, N. Y. Architects: Duane Lyman & Associates. Plumbing Contractor: H. C. Mapes Corp. of Lockport, N.Y. General Contractor: Seigfried Construction Co., Buffalo, N.Y.



in washrooms... dental labs... kitchens...



Crane fixtures serve 7,500 students in 8 modern buildings on Erie Co.Tech's new 120-acre campus

To meet industry's demand for technically-trained personnel, this impressive new Technical Institute was recently completed near Buffalo, N.Y. Its cost: $8,000,000.

The campus serves 2,500 day and 5,000 evening and extension students in 8 buildings. Over 400 Crane fixtures were installed—lavatories, closets, urinals and sinks. They were chosen for their utilitarian, yet attractive design and their reputation for durability.

The famous Crane flair for precision beyond ordinary standards assures years of satisfactory service. For instance, exclusive Crane Dial-ese controls largely eliminate the need for correcting dripping faucets. While Crane fixtures and fittings are competitively priced, their real economy becomes strikingly apparent in long years of use in institutions like this modern Technical Institute.

For more information about Crane plumbing, heating or air conditioning equipment for schools and institutions, see your architect or contractor. Or write to Crane Co., Box 780, Johnstown, Penna.

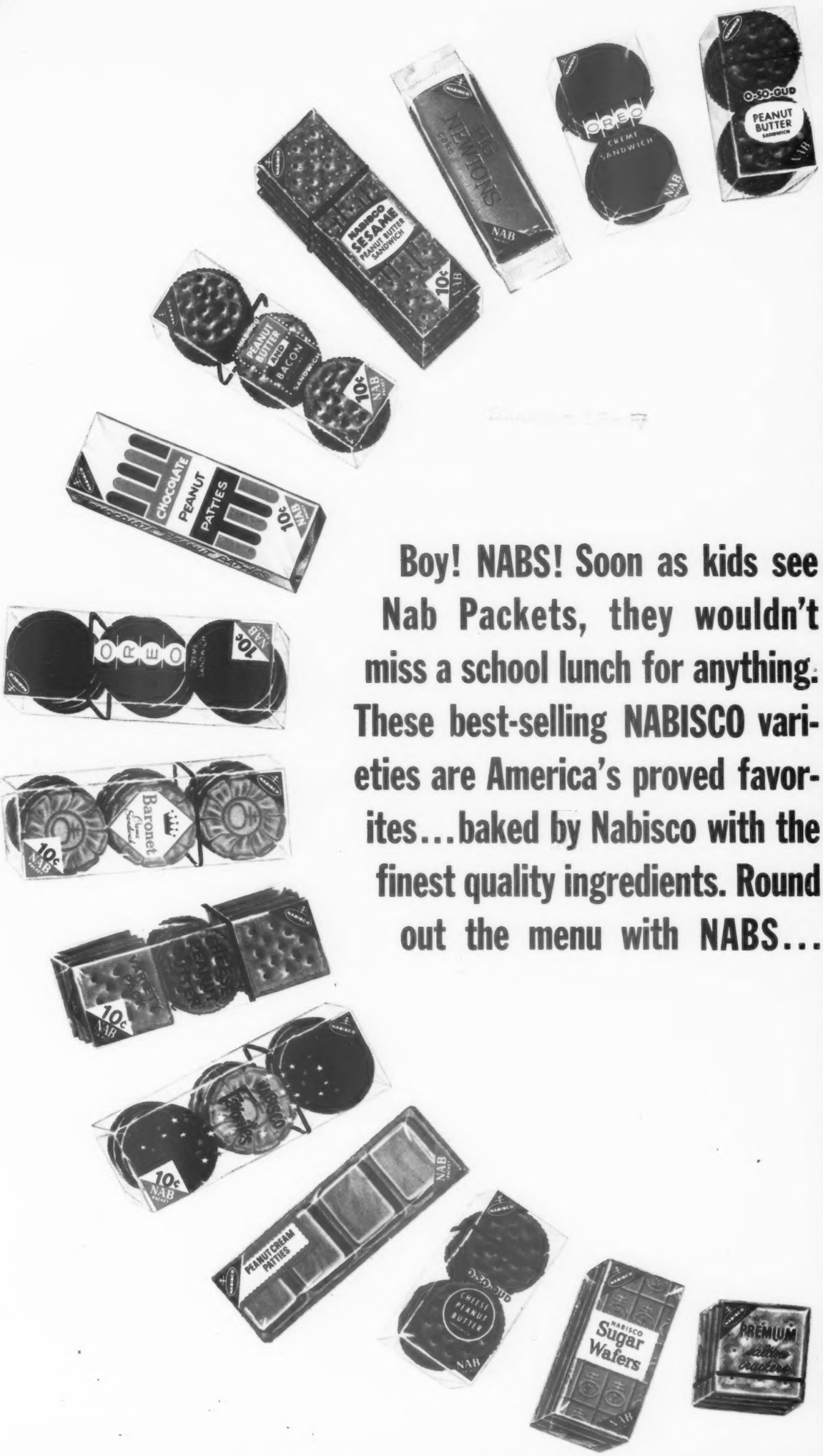
AT THE
HEART
OF HOME AND
INDUSTRY

CRANE

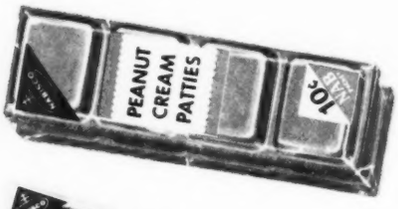
VALVES AND PIPING
ELECTRONIC CONTROLS
PLUMBING
HEATING • AIR CONDITIONING

(Circle number 715 for more information)

NABISCO



Boy! NABS! Soon as kids see Nab Packets, they wouldn't miss a school lunch for anything. These best-selling NABISCO varieties are America's proved favorites...baked by Nabisco with the finest quality ingredients. Round out the menu with NABS...



Every school menu looks new when you feature a new Nab variety. Delivered fresh! You can order Nabs as needed. (No stocking necessary!) Portion controlled! 5¢ and 10¢ Nabs come individually packaged. Order the brand with baked-in advantages—popular Nab Packets by NABISCO! See your local man for complete details.

NATIONAL BISCUIT COMPANY®

NAB PACK

THIS SHANNOVUE STRIP

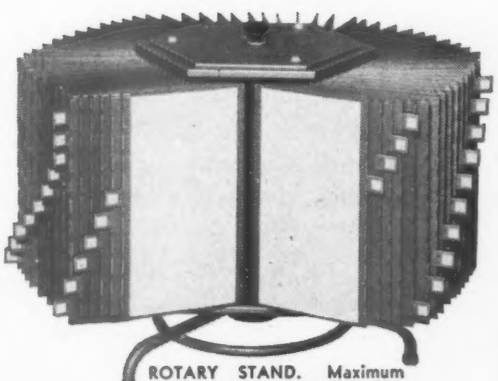
John Jones 1927 13th Street 762-3022 B-5

MAKES RECORD KEEPING AS EASY AS... 1 2 3

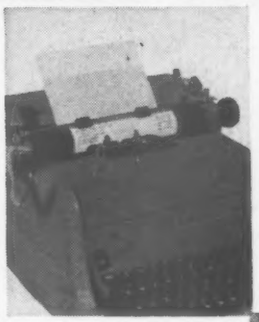
UNIT FOR WALL OR DESK. Maximum capacity of 30 twelve inch frames hold 4300 listings.

Three of the Shannovue stands, frames and cabinets that house STRIP RECORDS are shown here for handling such applications as: attendance, cafeteria, guidance, library, maintenance, property, report cards, finance, class schedules, student location.

DESK INDEX. Maximum capacity of 10 six inch frames hold 780 listings.



ROTARY STAND. Maximum capacity of 264 twelve inch frames hold 38,000 listings.



Visoline, Thin Visoline, and Tube Strips come to you in easily handled sheets. Put a sheet into any typewriter: You're ready to make corrections or additions the fast, easy way! Ideal for indexing and listing.

When you've typed the entry on a strip, you're ready to separate your new record from the remainder of the sheet. For Visoline and Thin Visoline: Simply pull the scored strip from the backing paper. Fast and neat. For Tube Strips: fold at the perforation and zip it from the remainder of the sheet.

Insert the new strip record in the frame. Springy Visoline and Thin Visoline strips bend while you insert the ends in the frame grooves, then they snap down smooth and flat.

SEND FOR THIS BROCHURE

Your inquiry will bring helpful material on how best to handle your record problems. Address:

Shannovue Dept.,
The H-O-N Co.,
Muscatine, Iowa.

NAME _____

TITLE _____

STREET _____

CITY _____ STATE _____

(Circle number 775 for more information)

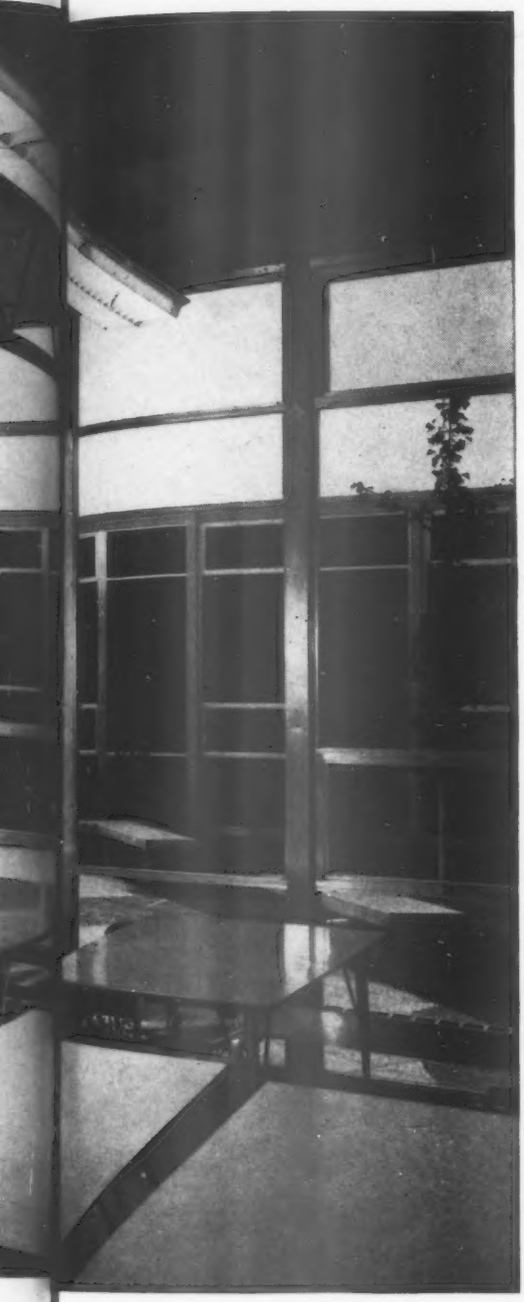
Plenty of Pittsburgh Polished Plate Glass means more natural light, less eyestrain for Finneytown High pupils.

This school was designed with eyesight in

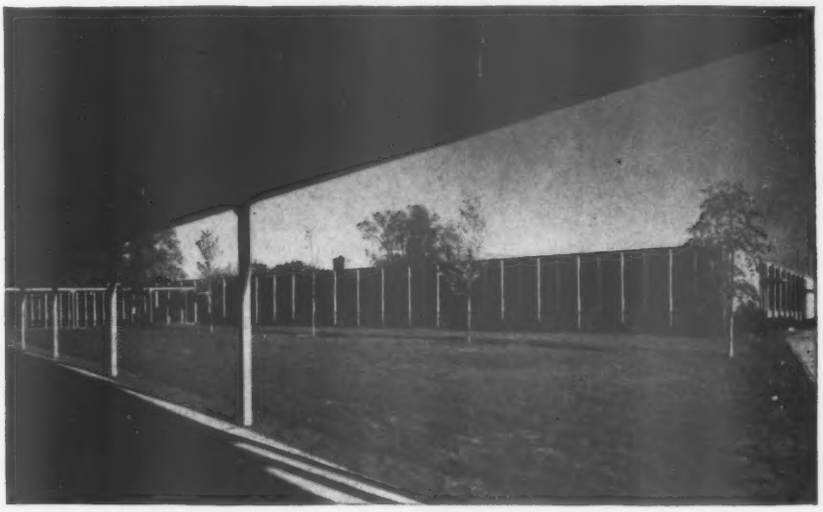
Wherever you look around the Finneytown High School in Finneytown, Ohio, there's glass—PPG Glass that lets in *plenty* of natural light, adds an extra measure of beauty to the buildings, and provides an ideal learning environment.

Two PPG Glass products play a big part in making this school the bright, spacious place that it is: Pittsburgh Polished Plate Glass and PENNVERNON® GRAYLITE™ 14 Glass. Polished Plate Glass is used in areas that demand maximum light transmission where natural light is essential. PENNVERNON GRAYLITE is used where glare is a problem. GRAYLITE 14 is heat-absorbing glass that has a pleasing neutral shade which is undetectable to occupants, does not change outdoor colors, yet substantially reduces glare that can be so hard on the eyes. It helps keep the school cooler and more comfortable in warm months, too.

Inside and out, this is a modern, attractive school building . . . as beautiful as it is functional . . . thanks to glass from PPG. For more information on PPG products, write Pittsburgh Plate Glass Company, Room 1230, 632 Fort Duquesne Blvd., Pittsburgh 22, Pennsylvania.

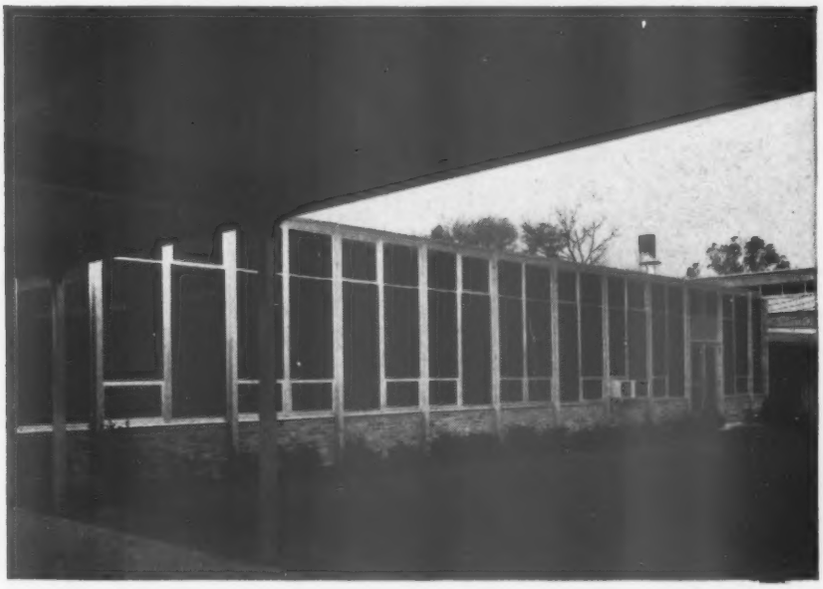


Finneytown High School, Finneytown, Ohio
Architect: Woodie Garber & Associates, Cincinnati, Ohio
Contractor: Holt & Reichard, Norwood, Ohio



Pittsburgh Plate Glass products enhance the appearance and help make the Finneytown school a pleasant place to attend.

PENNVERNON GRAYLITE 14 reduces the sun's glare and helps make this school a cooler and more comfortable building during the warm months.



ht in mind...with Glass from PPG

PPG Glass products for schools:

SOLEX® Plate Glass—green tint, heat-absorbing, glare-reducing glass
SOLARGRAY® Plate Glass—a neutral gray, heat-absorbing, glare-reducing glass
PENNVERNON® GRAYLITE™—a neutral gray, heat-absorbing, glare-reducing, heavy sheet glass
HERCULITE®—shock-resisting tempered plate glass
TWINDOW®—the world's finest insulating window
Polished Plate Glass—for clear, true vision
PENNVERNON® Window Glass—window glass at its best

Pittsburgh Plate Glass Company

Paints • Glass • Chemicals • Fiber Glass *In Canada: Canadian Pittsburgh Industries Limited*

(Circle number 779 for more information)

$ MONEY $ MONEY $ MONEY $
Here's A Way To Earn
$ All You Can Spend
$ MONEY $ MONEY $
CITATION
Popcorn Machine
Sales: $30.00 per hour
14 ounces per popping
2350 watts – 110 volt
Exhaust Filter. All Aluminum Alloy – rust proof and corrosion-resistant.
A 600.00 Value for only
$339.50
WHIZ BANG
Popcorn Machine
Sales of $24.00 per hour
2050 watts – 110 volt
Super Speed Kettle
Portable – plug in anywhere.
A 400.00 Value for only
$279.50
Other models from $199.00
All Units fully guaranteed by Gold Medal
POPCORN
It's easy to earn $1,000.00 to $5,000.00* every year with Popcorn and other Refreshment profits!
Thousands of Schools each earn hundreds of dollars per month profit with Gold Medal equipment and supplies. Our way is the easiest and lets you make the most.
FREE • FREE • FREE
Write today for detailed information on the Gold Medal way to Popcorn Profits. Free Booklet and Free catalog, will answer all questions and show you how easy it is to have huge net profits from Popcorn, Cotton Candy, Hot Dogs, Cold Drinks. Don't Delay – Write today sure!
PAY AS YOU POP PURCHASE PLAN AVAILABLE
PAY WITH THE PROFITS AS YOU EARN THEM!
*Depending on the size of your school, the selection of items and the frequency of operation.
School Supply Div. GOLD MEDAL PRODUCTS CO. 1829-37 FREEMAN AVE. CINCINNATI 14, OHIO DEPT. A
MORE PEOPLE BUY GOLD MEDAL POPCORN UNITS THAN ANY OTHER MAKE!

(Circle number 760 for more information)

No soiled hands...
JUST LIFT SEAT TO DESIRED HEIGHT
No dirty wheels or knobs or tools to handle. Just lift the seat to the desired height. The Ajustrite patented adjusting mechanism is the reason hundreds of thousands of Ajustrite Chairs and Stools are in service today. It's the oldest, the simplest, the fastest. And the most trouble-free—*that's why we guarantee it for 10 years!*
30-DAY FREE TRIAL No obligation. Prove to yourself the Ajustrite advantages in utility, comfort and economy.
32 Models for Factories • Schools • Laboratories • Hospitals • Offices
Laboratory RPC-2230
Classroom CPC-1520
Vocational Shop S-1827
AJUSTRITE CHAIRS AND STOOLS
AJUSTO EQUIPMENT CO.
Bowling Green, Ohio

(Circle number 723 for more information)

or both of these steps: 1) Retain a "master" copy of valuable tapes in a vault so that damaged copies may be easily replaced, and 2) use tougher tape (i.e., 1½ mil mylar). A premium price must be paid but they will outlast acetate tapes of the same or less thickness with the same quality in performance.

RICHARD S. LEVY
PRESIDENT
SENECA AUDIO-VISUAL CORP.
BUFFALO 10, N. Y.

Evolution in labs

SIR: We applaud your trends study of language labs (*SM, June '61*), particularly for its emphasis on the necessity for thorough evaluation of educational objectives prior to purchase. The recent phenomenal growth of the language lab "industry" has naturally put the glamorous "hardware" in the spotlight. All the more reason, therefore, why designers and manufacturers of lab equipment should have a continuing and responsible interest in sound teaching materials and the support of enthusiastic teachers—without which the lab is in danger of becoming a meaningless, costly frill.

May we, however, comment on an item of equipment terminology? Your author says "To use the (listen-respond-record) technique, each student will need two tape recorders or one recorder with a *binaural* head." A binaural machine transmits the model voice to one ear of the student, his response to his other ear. The binaural effect was soon found unsatisfactory for the language teaching situation. It was abandoned in favor of the dual-channel machine, which transmits both voices to both of the student's ears, as in the normal hearing process.

There is no binaural language laboratory on the market today. Hence the terminology may be confusing to your readers. Considering the development of machine equipment, the concept of using *two* tape recorders is highly impractical, in terms of both economy and operating efficiency.

Your author also states that magnetic recording tape "wears out rather quickly." More than 10 years of working with magnetic tape for language laboratory use has convinced us that it is quite durable. It can, in fact, be used for years without deterioration of quality.

IRVIN SHAPIRO
ADVERTISING MANAGER
ELECTRONIC TEACHING LABORATORIES
WASHINGTON 16, D. C.

Ray Dzombak brings West's 78 years of maintenance experience to St. Joan of Arc School, Sandwich, Ont., Canada.

A man like

Ray Dzombak

can be your authority on school sanitation and maintenance problems

He is one of West Chemical's 457 school experts who offer you free personalized technical service

CUTS DUST, PROTECTS FLOORS. While Chief Caretaker Gerard Parent applies Westone®, Dzombak discusses West's floor maintenance program with Ernest J. Poulin, Business Administrator for Sandwich East Separate School Board. Both note how Westone® enhances floor finish as it checks dust.

DRY HANDS WITHOUT WASTE. Westroll® paper towels and metered cabinets reduce towel costs up to 40%. Dzombak shows Caretaker Parent how cabinets (loaned free) are jam-proof, tamper-proof, easy to fill.

ST. JOAN OF ARC SCHOOL has followed West sanitation and maintenance programs for over 11 years. Dzombak regularly and personally checks results with Mr. Poulin to improve efficiency, reduce costs.

In every major city in the U. S. and Canada, there's a technical expert like Ray Dzombak to analyze your requirements. He's experienced at solving problems with an efficient West Maintenance Program. He works with your staff — gives free instruction, free supervision and free periodic follow up.

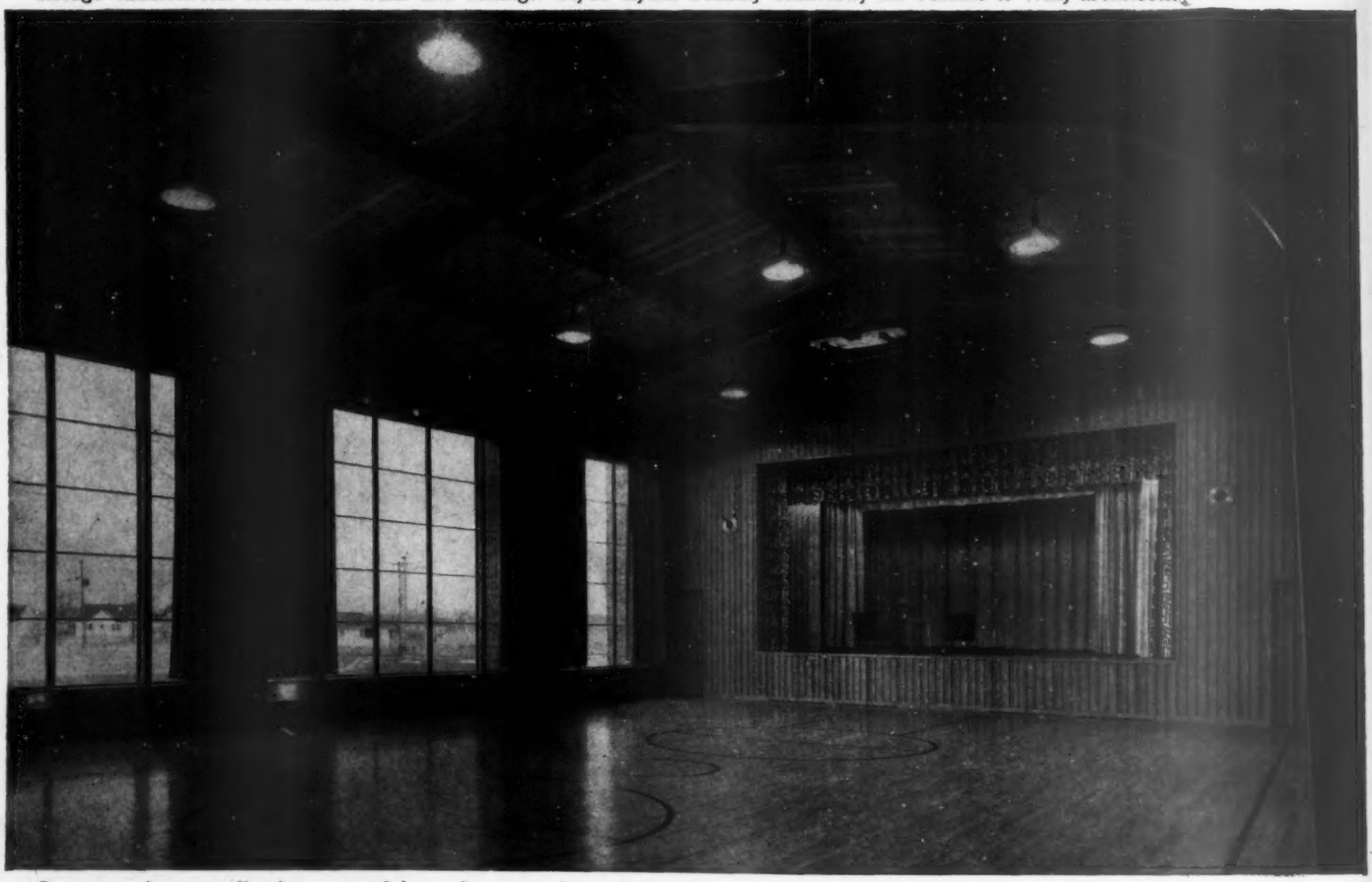
He can guarantee improved appearance and higher sanitation standards . . . and help you reduce maintenance costs. For full information, call your nearest West office or write West Chemical Products, Inc., 42-16 West St., Long Island City 1, N. Y. In Canada, 5621-23 Casgrain Ave., Montreal.

America's foremost specialists in school sanitation and maintenance

WEST CHEMICAL PRODUCTS INC.

(Circle number 784 for more information)

While it helps make even the youngest children feel at home, wood is endlessly adaptable to activity areas, study halls, storage cabinetwork. Note these walls and ceilings. Clyde Lyons School, Glenview, Ill. Perkins & Will, architects.



In gymnasiums, auditoriums, wood has advantages beyond its space-spanning strength and economy. Wood floors wear well, walls and ceiling radiate beauty. Benjamin Franklin School, Manitowoc, Wis. Childs & Smith, architects.

Individual coat stalls of wood line the corridors of this modern school. Wood paneling gives a fine, friendly look to the walls and overhead structure. Bryn Athyn Elementary School, Bryn Athyn, Pa. Vincent G. Kling, F.A.I.A., architect.

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Please turn page for details...

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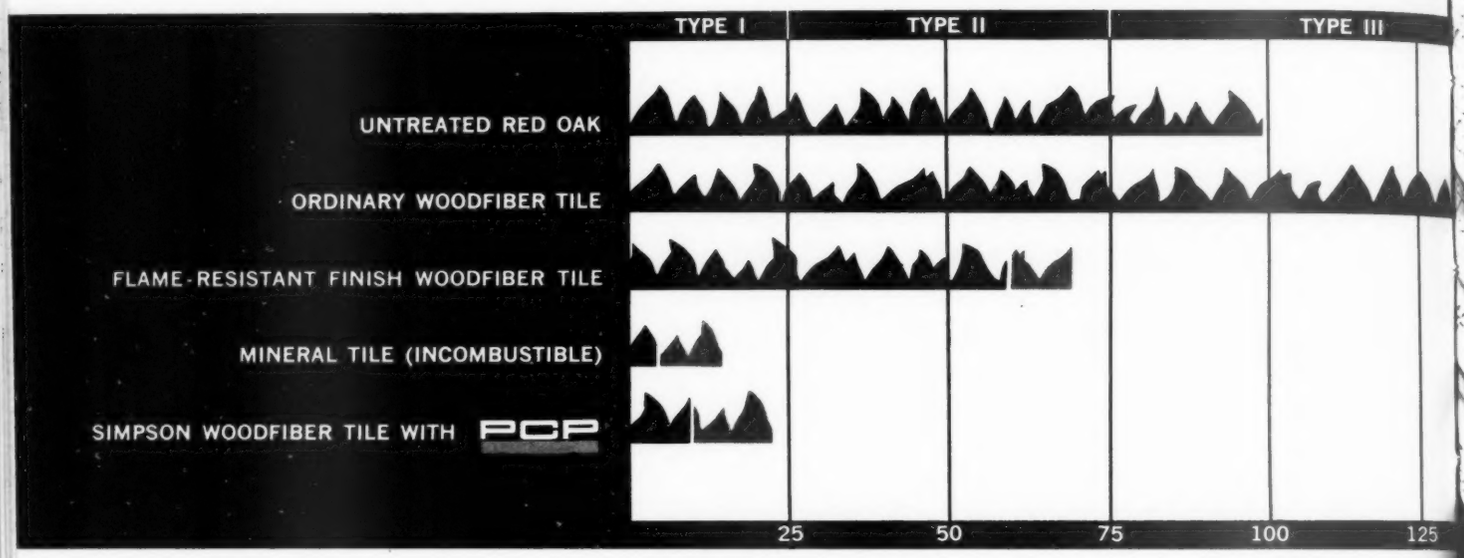
RELY ON Simpson QUALITY BUILDING PRODUCTS



PCP acoustical tile certified as Type I, E84-60T

	Pyro-Chem Protected woodfiber tile	Flame-resistant finish woodfiber tile*	Mineral tile (incombustible)
Flame-Spread	10 - 23	60 - 70	5 - 15
Fuel Contributed	23 - 27	42 - 44	25 - 29

*Simpson FRF rating — other cellulose tiles rate up to 100 and over

Untreated red oak — rated at 100 Asbestos rated at — 0
Type I 0 - 25 Type II 26 - 75 Type III 76 - 200
Note: PCP Forestone was tested by a leading independent research institute. Name of laboratory and complete test results upon request.

PYRO CHEM PROTECTION PCP

SIMPSON HAS DEVELOPED PYRO-CHEM — an exclusive process that impregnates every fiber with fire-proofing chemicals. In recent tests conducted by a leading independent research institute (name on request) Simpson PCP woodfiber tiles scored flame-spread ratings as low as 13 — all within the 0 to 25 range required for certification as a Type I material under ASTM E84-60T Tunnel Test.

Woodfiber acoustical tile is accepted as the most economical product to provide effective noise control. Simpson woodfiber tile with flame-resistant finish is equal or superior to any surface treatment available. But until today architects, contractors and building committees have been forced to more expensive materials when a Type I flame-spread rating is required.

WHAT THE TUNNEL TEST TELLS YOU ABOUT FIRE HAZARDS

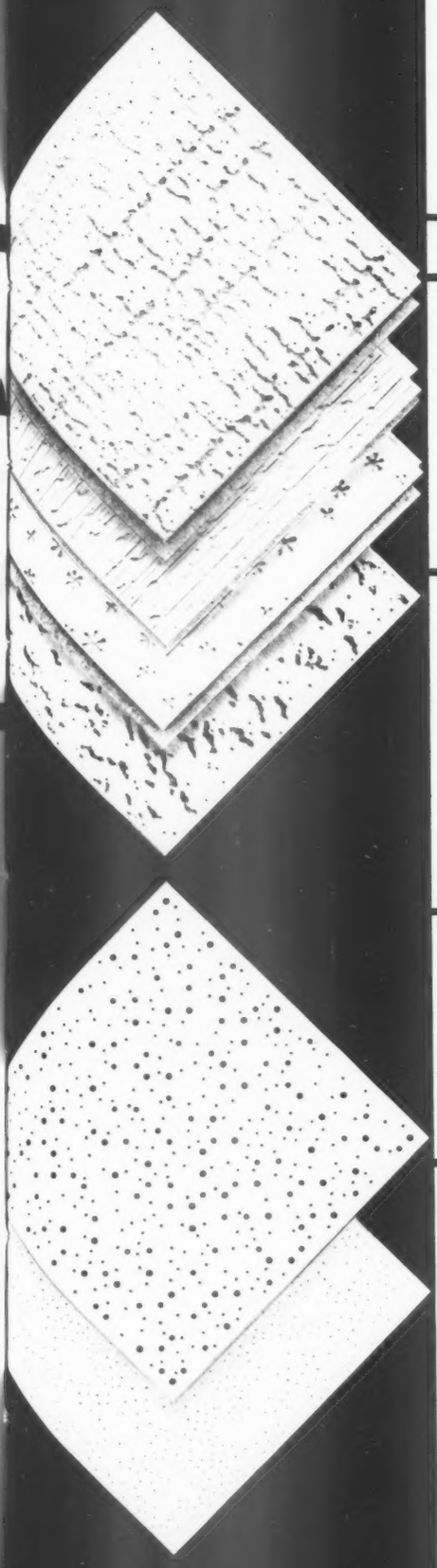
The tunnel test (used to test the efficiency of Pyro-Chem) measures how far a building material will propagate a flame from an outside fuel source. It simulates actual fire conditions under laboratory control. This tunnel test was developed by the American Society for Testing Materials. It is accepted by the Acoustical Materials Association, Building Officials Conference of America, and Uniform Building Codes of the International Building Officials Conference.

SAVE UP TO 1/3

Now you can have Type I flame-spread protection equal to that of mineral tile costing up to 15 cents more per square foot. Simpson PCP acoustical tile is far superior to ordinary woodfiber tiles, yet costs only pennies more per foot.

PCP ACOUSTICAL TILE PYRO-CHEM PROTECTION AVAILABLE IN SEVEN PATTERNS

Simpson offers a complete variety of sizes, thicknesses, and surfaces. Four textures are available in Forestone® PCP plus two perforated PCP patterns. This makes it possible to select the specific combination of beauty, noise control, economy, and fire safety required for each installation.



Simpson

PCP

PYRO-CHEM PROTECTION

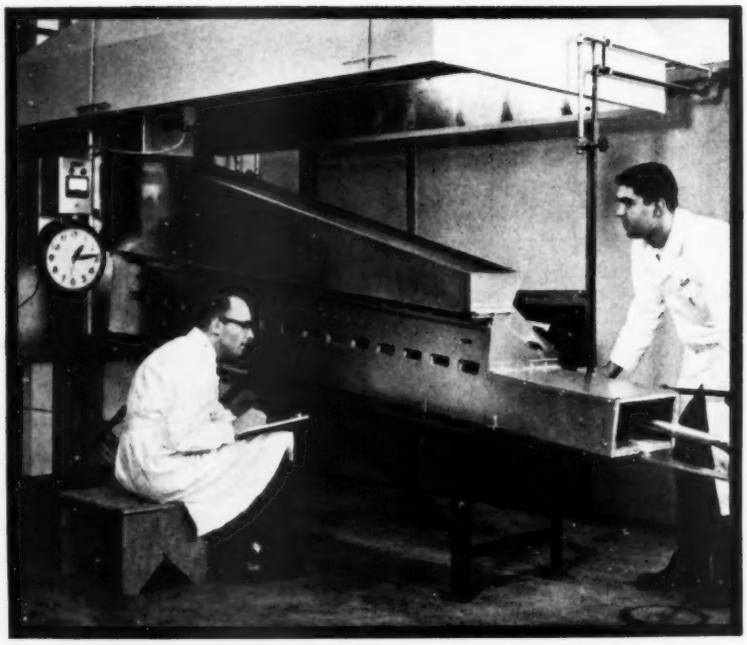
PCP ACOUSTICAL PRODUCTS

SIMPSON PRODUCT	THICK-NESSES	SIZES	TYPE EDGE	INSTALLATION METHODS	FIRE HAZARD CLASSIFICATION	EFFICIENCY* (NOISE RED. COEF.)
FORESTONE TEXTURES						
DRIFTWOOD PCP	9/16"	12" x 12"	Flange joint	Stapling or nailing	ASTM E 84-60T Type I Flame-Spread 10 - 23	.60 to .70 depending on thickness and method of installation
STRIATED PCP	9/16"	12" x 12"	Beveled, kerfed & rabbeted	Cementing, nailing or mechanical suspension		
STARLITE PCP	9/16"	12" x 12"				
FORESTONE FISSURED PCP	9/16" 3/4"	12" x 12"	Beveled	Cementing, nailing or mechanical suspension	ASTM E 84-60T Type I Flame-Spread 10 - 23	.60 to .70 depending on thickness and method of installation
	9/16" 3/4"	12" x 24"	Flange joint centerscored	Stapling, nailing or mechanical suspension		
	3/4"	12" x 23-3/4"	Beveled, kerfed & rabbeted	Exposed Z or T mechanical suspension		
PERFORATED PATTERNS						
RANDOM DRILLED PCP	1/2"	12" x 12"	Beveled	Cementing, nailing or mechanical suspension	ASTM E 84-60T Type I Flame-Spread 10 - 23	.60 to .75 depending on thickness and installation method
	3/4"	12" x 24"	Centerscored			
PETITE PCP	1/2" 3/4"	12" x 24"	Flange joint centerscored	Cementing, nailing or stapling, mechanical suspension		

*Figures given are for untreated tiles.
Ratings for PCP tiles are not yet available,
but they are expected to correlate
closely with those for untreated tiles.
See Sweet's catalog (11a Sim) for complete tables.

The Los Angeles Fire Department, recognizing the importance of the problem, has been conducting full-scale experiments for several years to determine performance of various materials under actual fire conditions. Their experiments have proved a very close correlation between performance under actual fire conditions and tunnel test ratings.

Forestone is patented under U.S. Pat. No. 2,791,289

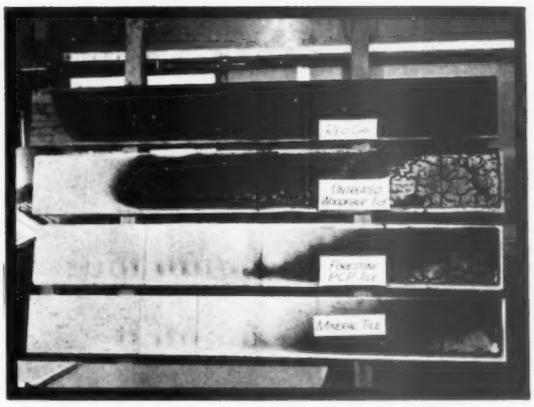


Pictured is tunnel-testing equipment at Simpson's Seattle, Washington, laboratory. Simpson is the first building materials manufacturer to build its own fire test tunnel, a replica of the one used by U. S. Forest Products Laboratory. Pyro-Chem is the latest of a long line of dramatic new building products developed through Simpson's continuing research program.

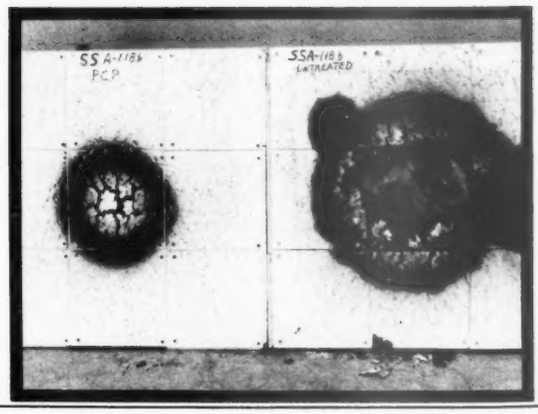
Simpson

PCP

PYRO-CHEM PROTECTION



Typical sample panels (top) after testing in Simpson's tunnel test equipment.
Sample panels after testing (bottom) in accordance with Federal Specifications SSA-118b. Left: PCP tile after 40 minute test. Right: untreated woodfiber tile after only 20 minute test.



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For the first time it is possible to obtain maximum flame spread protection combined with the tremendous economies of woodfiber acoustical material.

New Simpson PCP acoustical products may be used anywhere an **absolutely** incombustible ceiling is not required. This makes possible great savings in construction of schools, clinics, churches, stores, restaurants and similar buildings. Simpson PCP products were especially designed for those institutional, commercial and recreational facilities where a low flame-spread rating and effective sound control are necessary, but where cost savings are desired.

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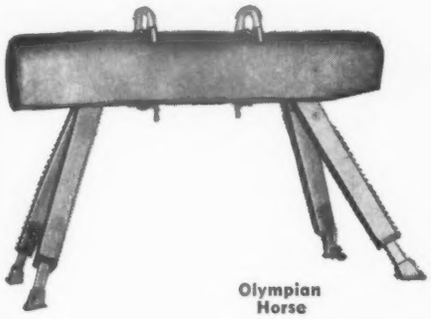
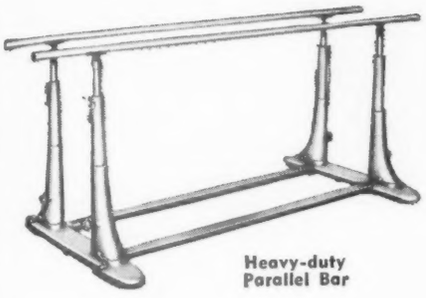
SIMPSON CERTIFIED Simpson ACOUSTICAL CONTRACTOR

NEW FROM PORTER



Olympian Horse



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Heavy-Duty Line

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Where to get help

A guide to useful information

CONSTRUCTION

Building in new ideas. Here's a reference guide for one aspect of school planning that cannot be neglected in older buildings or modern ones—building in accommodations for use of media.

"Media" in this sense, means films, radio, television, electronic learning laboratories, intercommunications systems, reading accelerators and other devices. Why have these media available, asks the guide, if they cannot be used because no plans were made for them?

This manual presents essential information needed by laymen, school administrators and architects for planning schools which would utilize modern teaching technology. It was prepared by three Portland, Ore., educators, and illustrated by Architect C. W. Brubaker, in cooperation with the Media Branch of the Office of Education.

In an orderly and helpful manner, the manual explains what will be needed in the way of instructional materials centers, classrooms, language laboratories, auditoriums and multi-purpose rooms, and communicative systems.

PLANNING SCHOOLS FOR NEW MEDIA. *Available from Division of Education, Portland State College, Portland, Ore. 72 pages. $1.*

RESEARCH

Studies in agriculture. Here are summaries of studies completed in agricultural education during the 1959-60 academic year. There are 106 studies, including doctoral dissertations or problem studies conducted in partial fulfillment of advanced degree work.

SUMMARIES OF STUDIES IN AGRICULTURAL EDUCATION. *Superintendent of Documents, U. S. Government Printing Office, Washington 25, D.C. 56 pages. 25 cents.*

SMALL SCHOOLS

Putting life in small high schools. A small high school is necessarily limited in its educational offerings. This is particularly true with schools in isolated areas, where there is little chance for growth and expansion.

Some small schools have conducted experiments to bring about im-

TRANSPARENT FIGURE of the *Human Body*

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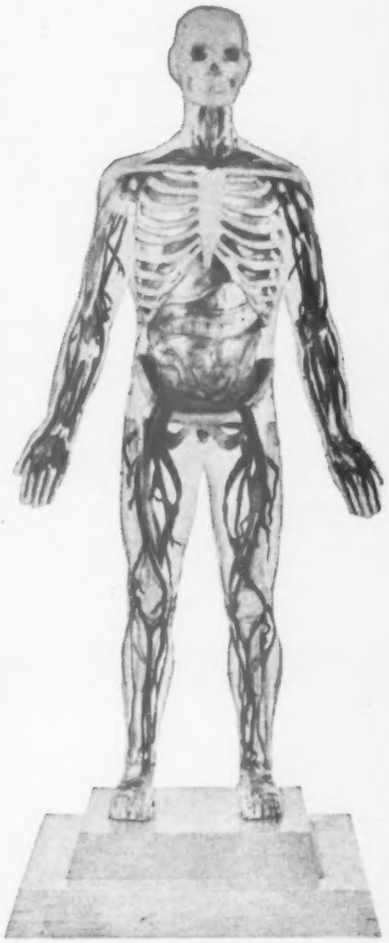

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says O. C. Hufziger, Assist. Supt. in Chg. of Business, School Dist. of Pontiac, Mich.

"We wanted fencing to fill a number of needs at three schools in our district. An older Anchor installation and the cost-saving advantages of the new fencing convinced us we were on safer grounds with Anchor Fence. And we have been. It keeps children in the schoolyard, out of school driveways. It backstops a softball field at one school, encloses tennis courts at another. In fact, with its low-cost maintenance and high standard of quality, I'd recommend Anchor Fence to any other school district—with confidence."

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(Circle number 706 for more information)

provement in their administration and their instruction. While the results of these experiments are not available, this book from the Office of Education tells what has been attempted, and how.

The book refers frequently to the Catskill Area Project in Small School Design and the Rocky Mountain Area Project for Small High Schools.

RURAL RENAISSANCE: *Revitalizing Small High Schools. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D.C. 54 pages. 25 cents.*

MAINTENANCE

Management aspects. There's no point in investing huge sums of money in top-quality materials and equipment if the people who are to keep them in good condition and running order don't know what they're doing.

But before you see that your equipment is being cared for, there are some other matters that must be attended to. For example, making sure you have enough custodians and maintenance men, formulating custodial personnel policies, defining custodial duties and establishing work schedules.

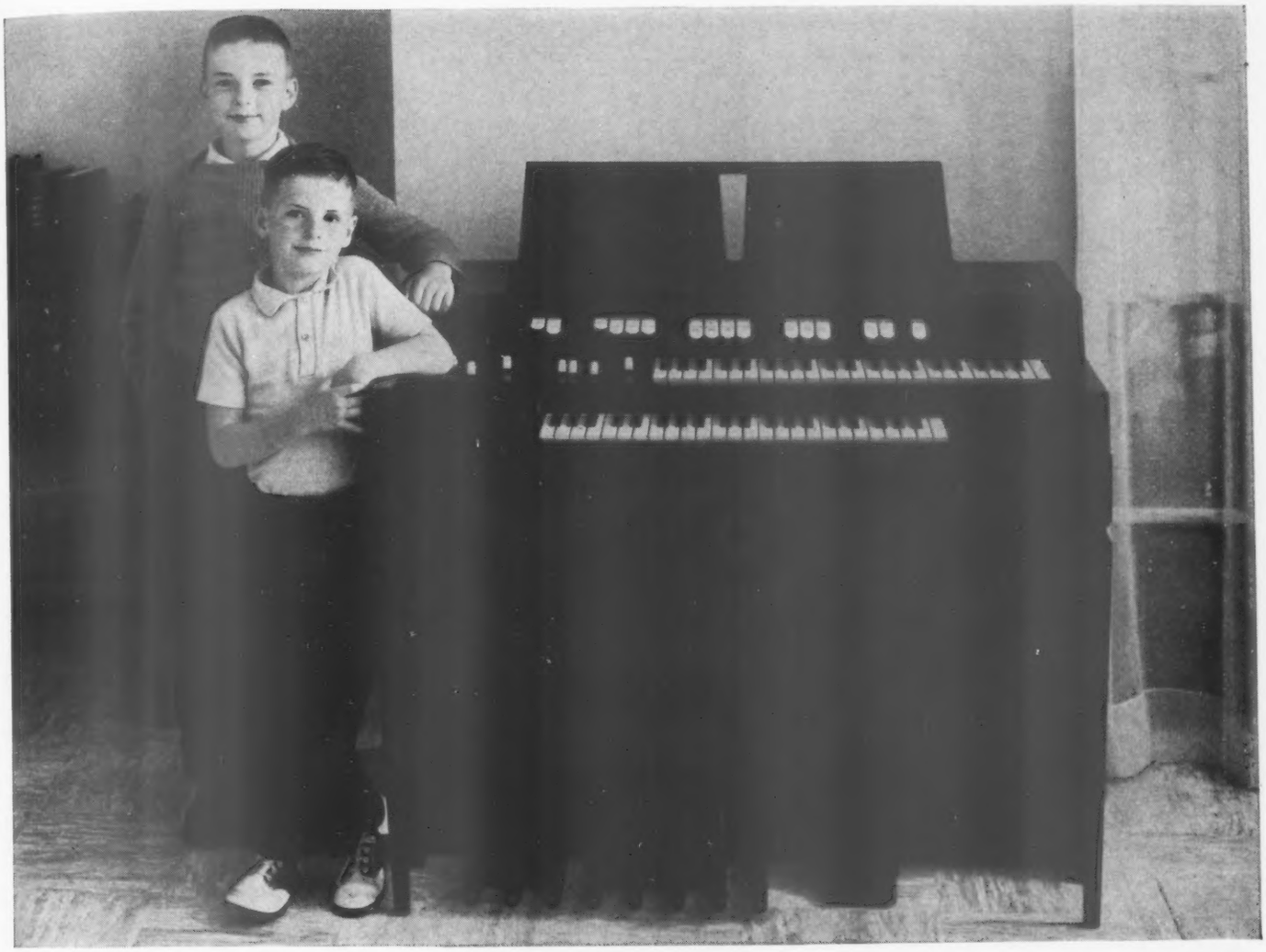
Then, you can organize and conduct a custodial training program. Finally, arrangements can be made for procuring, storing and distributing those expensive supplies and equipment.

That's the theme of this Office of Education bulletin. It brings together practices, ideas and suggestions not for caring for equipment, but for caring for your custodians.

For example, determining manpower requirements for school plant operational services, and equalizing workloads among personnel doing essentially the same jobs, are two problems which have always plagued school administrators. "There's no rule-of-thumb method for answering these problems," says the book, "but there are some factors which are pertinent." Some of these are site (total lawn area to be mowed, type and quantity of playground equipment, etc.); building (are there enough custodial closets, is the heating plant automatic); climate (amount of precipitation).

How about formulating custodial lines of authority? The book says that "pupils, teachers, lunchroom workers, and even parents may exploit the generosity of some custodians to such an extent that the latter are unable to perform their regular duties . . ." A reasonable

text continued on page 40



NEWS!

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(with exclusive Hammond features from more expensive Hammond models)

The advantages of owning a Hammond Spinet Organ—its suitability for so many school activities, its immense musical capacity, its ease of playing—these are now yours at a new *low* Hammond price. Only $995.

And at this new low price you will have all these exclusive Hammond features formerly available only on the more expensive Hammond Organs:

Harmonic Drawbars let the teacher or student blend thousands of different tones.

Reverberation gives listeners in the smallest room the rich, three-dimensional tone of music played in a large auditorium.

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Touch-Response Percussion lets the organist bring in any percussion effect—such as bells or harp—by just a slight change of touch on the keys.

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☐ Please send free booklet describing ways my school can raise funds for an organ.

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Dixie* Disposable Meal Service!

that clatter. ▪ It's Just Plain Nicer: A variety of pieces all in one pleasant homier pattern — no more chipped and mismatched table ware, no "mess-hall" look. And, don't overlook Dixie's Mira-Glaze Hot Drink Cups and Dishes—with the smooth miracle finish that eliminates cardboard taste, plastic odor, staining, and preserves the true flavor of good coffee and even the hottest moist foods. ▪ Why not contact your Dixie Cup representative now, he'll be glad to give you samples and any details you need.

DIXIE CUPS
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(Circle number 716 for more information)

adherence to sound policies governing supervisory control will protect both the custodians and district against unjustified demands.

ADMINISTERING THE CUSTODIAL PROGRAM. *Superintendent of Documents, U. S. Government Printing Office, Washington 25, D.C. 97 pages. 40 cents.*

LANGUAGE INSTRUCTION

An appraisal. Theodore Huebener, author of this book and director of foreign language instruction in New York City schools, makes this point early: "Our educators have prided themselves upon the fact that they have provided for the development of every aspect of the child's personality. Among the trite expressions used are 'child-centered school' and 'the whole child.'

"But in their eagerness to educate the child for his environment, the educators have lost sight of the meaning of 'community.' They fail to realize that through modern means of communication and transportation, the immediate environment has expanded to a much vaster community. It now extends to the furthest reaches of the globe—and beyond.

"Yes, let us educate the whole child, but let us educate him for his whole environment. A knowledge of foreign languages is not merely a desirable asset; it is absolutely imperative."

Dr. Huebener says that schools have the duty of equipping all normal pupils with the knowledge and skills necessary for an intelligent solution of world problems. "First and foremost—not last—among these skills, is competence in a foreign language. Such competence is also a definite economic asset, not a cultural luxury. It is a practical necessity. Who knows whether the future ambassador to France may not be seated in Miss Jones' French class?"

A geographical sketch of the chief languages of the world is followed by a discussion of which languages should be taught in our schools. Dr. Huebener points out that despite the hue and cry and clamor for crash programs, there have been no fundamental changes to provide more effective language instruction. In number of school hours devoted to language teaching, the United States is last among the major nations, he says.

What can be done? As a beginning, Johnny should learn not one, but two languages. Preliminary instruction should begin in elementary school, and he should begin concentrated study of one language in the seventh grade, the other in the 10th. Both languages should be continued in college.

At least one language should be studied for the high school commercial diploma.

A language should be a required subject in teacher training institutions.

There should be strict adherence to the language requirement for the Ph.D. degree. "It would be perfectly reasonable," says Dr. Huebener, "to expect anyone who plans to do research to be able to read a foreign language. Yet many institutions do not require it. California has even passed a law forbidding it."

WHY JOHNNY SHOULD LEARN FOREIGN LANGUAGES. *Chilton Co., 56 & Chestnut Sts., Philadelphia 39. 142 pages. $4.*

PROGRAMED LEARNING

Teaching machines simplified. "How can a machine teach?"

A simple answer to that question has been hard to find, but one now appears at hand. The answer is not found in a word or two, but in an eas-

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ily digested, nontechnical explanation of teaching machines and what they can be expected to accomplish.

First, authors Sam and Beryl Epstein define teaching machines and their programs. They then explain how a program—not a machine—teaches. Everything is told in terms even the student could grasp.

Have you ever asked the question, "Why use a teaching machine at all?" The authors have a simple answer to this too. They also tell of various kinds of machines which are now available, and the history of teaching machines. They explain things so well and so simply, in fact, that it takes them just 50 pages (in large type) to do it, and that includes illustrations and an index.

THE FIRST BOOK OF TEACHING MACHINES. *Franklin Watts, Inc., 575 Lexington Ave., New York City 22. 50 pages. $1.95.*

SUPPLIES

Warehousing costs. What are the advantages and disadvantages of central warehousing of school supplies?

You won't find the whole answer to that question in this book, but you'll get an idea of what central warehousing costs. To help you figure the expense, the author has provided a cost-analysis guide—a worksheet for the superintendent or business manager. This cost guide was actually used to figure warehousing costs in eight Arizona school districts.

Using the cost-analysis guide, the districts found they were spending from nine to 17 cents per dollar of supplies warehoused. The districts were stocking materials ranging, in total value, from nearly $200,000 to less than $14,000. Only two seemed to be getting anywhere near optimum use of their central storage facilities.

Among the author's conclusions are: the per dollar cost of warehousing is much greater than commercial warehousing; the more supplies stored in a district's central warehouse, the greater the per dollar cost; much of the cost of school warehousing is hidden in other accounting segments, such as supervision.

The last six pages of the booklet are devoted to the cost-analysis worksheet developed by the author, Dr. Gordon G. Caswell, formerly a school superintendent and now at the College of Education, Arizona State University.

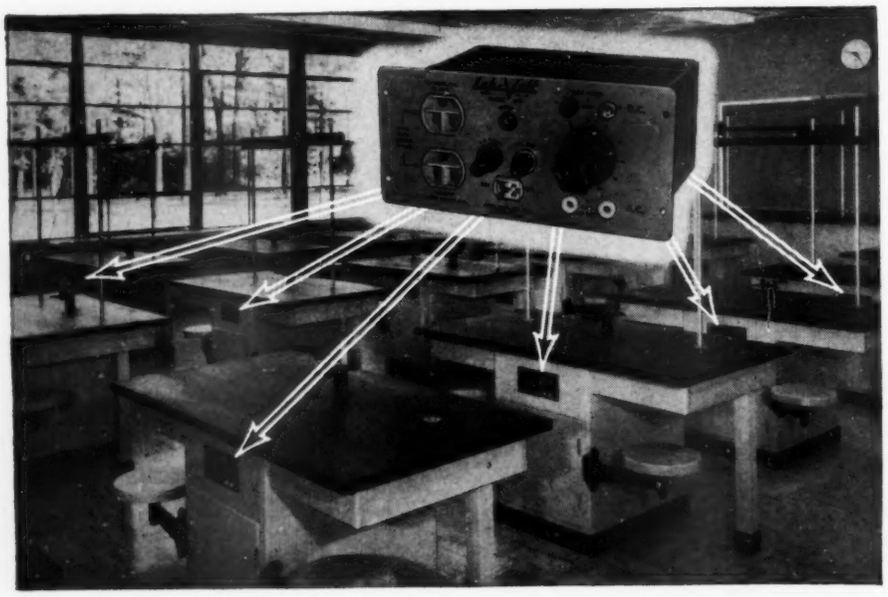
WHAT PRICE SCHOOL SUPPLY WAREHOUSING? *National School Supply and Equipment Assoc., 27 E. Monroe St., Chicago, 3. 23 pages. Free.*

EDUCATIONAL HISTORY

The death of progressivism. "The death of the Progressive Education Association in 1955, and the passing of its journal, *Progressive Education*, two years later, marked the end of an era in American pedagogy. Yet, one would hardly have known it from the pitifully small group of mourners at both funerals."

Those are the opening remarks of author Lawrence A. Cremin in this interesting history of progressive education. He discusses the educational history of the U. S. from 1876 to 1957 as part of the social and intellectual history of the period, interrelating all three elements. He deals critically with leading educators of the era (Horace Mann, John Dewey, Edward L. Thorndike and others) and appraises actual programs of the leading progressive schools in this country.

THE TRANSFORMATION OF THE SCHOOL: *Progressivism in American Education. Published by Alfred A. Knopf, 501 Madison Ave., New York City. 387 pages. $5.50.*



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THINGS YOUR PUBLIC OUGHT TO KNOW

How school construction affects your community

A new study, just published by the Department of Labor, analyzes the local effect of building a new school, and puts a powerful weapon in the hands of schoolmen everywhere.

■ ■ ■ Building a new school takes taxpayers' money—but it also makes money for them. This fact is borne out by a new study just concluded by the Department of Labor's Bureau of Labor Statistics.

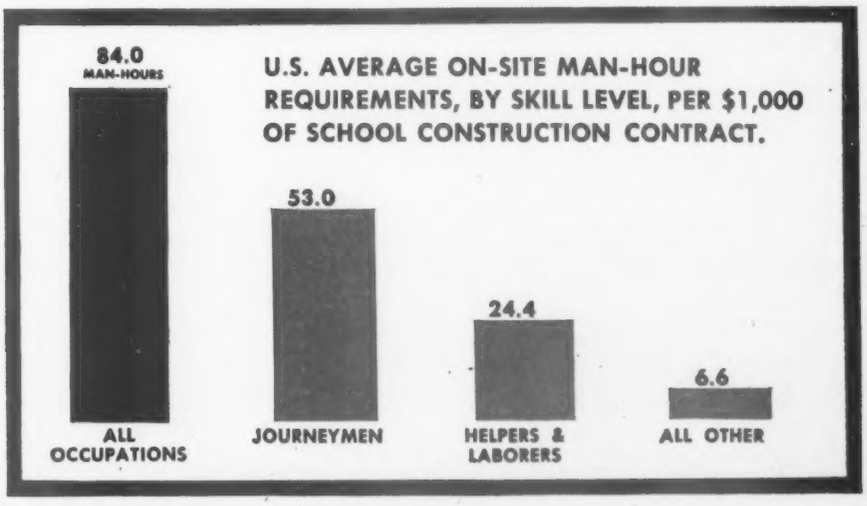
For every $1,000 spent on constructing a school, 212 hours of work are created, the study shows. And the largest part of this work is done by local labor.

The average school constructed in 1959 cost about $730,000 (exclusive of site and planning costs) and took about a year to build. This construction created a year's employment for 81 workers—at least 38 of them local people involved in on-site construction of the school itself. More local workers would almost certainly be involved in off-site jobs.

The Bureau of Labor Statistics (BLS) estimates that approximately 275,000 jobs are created annually by school construction—115,000 of them on-site, the others for such off-site activities as supplying the materials and services for the building operations.

The BLS statistics are based on a survey of 85 elementary schools and 43 junior and senior high schools. The schools, built under

text continued on page 48



In modern schools such as this, where fixtures are selected for esthetic as well as functional reasons, Day-Brite lighting is the logical choice for creating a pleasant, efficient environment for learning.

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Sierra Union High School, Auberry, California
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Good lighting, of course, was a *must*. High, sloping ceilings might have presented a problem . . . especially since suspended fixtures would have marred the clean, uncluttered architectural effect. And structural limitations eliminated any possibility of using recessed equipment.

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contracts awarded between July 1958 and June 1959, were all complete new structures. Additions and remodeling projects were not considered in the survey.

The projects were analyzed on a national basis, for four regions (Northeast, North Central, South and West), and by character of surrounding area (metropolitan or nonmetropolitan).

Statistics were also compiled by the total cost of the project, type of framing, number of floors, whether or not they had basements and the type of material used on their exteriors.

The BLS survey found great variations in the number of hours worked on different projects. These variations were based on types of materials and the amount of mechanization utilized on the job (in metropolitan areas, where heavy construction machinery was available, man-hours worked fell). But, where man-hours dropped, wages rose, as more skilled workers were necessary.

As a result, the survey found that, almost without variation, on-site labor costs amounted to approximately 26% of the total contract.

This means that approximately 26% of the total contract cost of a school is paid out in salaries and wages that are immediately respent in the local area. For every $100,000 spent on a school, at least $26,000 is made immediately available to local merchants. The average school built during the period surveyed, resulted in almost $190,000 being paid in local wages alone.

Employment created by the respending of the wages and profits of the workers and their employers—the multiplier effect—was not considered within the scope of the BLS study, but it would obviously be a major factor in the economy of any local area.*

Occupational effect

Construction of a new school means increased employment for all skills related to the building trades. But (according to the BLS study), carpenters account for a larger percentage of the on-site man-hours than any other skilled group. Here is the breakdown on the various trades.

Fully 18.7% of the on-site work is performed by carpenters. Much of this is not directly related to wood work. In fact, carpenters now often perform such tasks as installation of floor tile, metal forms and other jobs not previously associated with their trade.

Plumbers and bricklayers, the next most frequently employed skilled workers, each represent slightly less than 10% of total on-site employment. Electricians, ranking fourth, account for just over 7%.

Unskilled laborers, helpers and tenders make up about 30% of the on-site labor force. This varies sharply by region, due undoubtedly to the effect of labor unions and mechanization. In the South, where organization and mechanization are relatively low, laborers, tenders and helpers account for almost 40% of the labor force. In the West, they represent less than one quarter.

** When a man is employed on the school job, he brings home more money that can be spent on food, clothing and entertainment. This, in turn, makes it possible for merchants and other retailers to employ a greater number of workers who themselves are then able to purchase more goods. This is known as the "multiplier effect."*

ON-SITE MAN-HOURS REQUIRED DURING CONSTRUCTION OF NEW SCHOOL

	United States			United States			Northeast		
		COST PER		MAN-HOURS PER			MAN-HOURS PER		
	Number	Square foot	Classroom (thousands)	$1,000 of cost	1,000 square feet	Classroom	$1,000 of cost	1,000 square feet	Classroom
All schools	128	$14.16	$35.0	84.0	1,189	2,938	76.0	1,291	3,249
Elementary	85	13.26	24.8	86.7	1,150	2,153	83.3	1,417	2,697
Secondary	43	14.67	44.3	82.6	1,212	3,656	72.6	1,233	3,646
In a metropolitan area	70	14.68	37.5	82.6	1,212	3,092	74.4	1,307	3,499
Not in a metropolitan area	58	13.11	30.5	87.2	1,144	2,656	79.0	1,266	2,894
Construction cost group:									
$200,000 and under	22	11.57	19.9	90.0	1,041	1,787	(1)	(1)	(1)
$201,000-300,000	16	10.60	20.0	92.0	974	1,842	(1)	(1)	(1)
$301,000-$400,000	24	12.15	23.2	95.6	1,161	2,214	84.2	1,265	2,476
$401,000-$500,000	15	12.08	23.6	85.8	1,037	2,029	(1)	(1)	(1)
$501,000-$1,000,000	24	14.77	30.2	81.2	1,199	2,449	79.1	1,359	2,619
$1,001,000-$2,000,000	17	13.89	41.7	82.2	1.142	3,427	74.5	1,151	3,047
$2,001,000 and over	10	16.48	56.3	81.7	1,347	4,604	73.6	1,389	4,515

[1] *Insufficient data to warrant presentation.*

Apprentices, employed under formal training programs, account for 3.7% of the total man-hours on school projects. Many of these jobs would probably be held by local high school graduates getting on-the-job training in various skills.

Share of the dollar

Carpenters receive the biggest immediate share of the total construction dollar, 4.6 cents. Laborers earn 4.3 cents and bricklayers, plumbers and electricians all are paid more than three cents out of each dollar in the total contract.

Variations in this pattern are wide and depend again largely on region (in the West, where more wood schools are constructed, carpenters get a larger share), union conditions and the extent of mechanization.

The first workmen to benefit from a building program after the contracts are let, are the operating engineers, truckdrivers, carpenters and laborers. Peak employment for other skills follows in succeeding waves—cement finishers, structural ironworkers, plumbers, bricklayers, roofers, sheet metal workers, plasterers, and finally, glaziers, tile setters and painters.

Although the other trades have peak periods, carpenters and laborers are employed almost constantly throughout all periods of construction.

Off-site employment

Off-site employment while it may not affect the local community as directly as on-site work, still does bring available money into the area.

Off-site employment can be classified in four general categories:

1. Construction industry, including administrative, estimating and warehousing functions. Much of this local.

2. Manufacturing activities producing materials, ingredients and equipment for the schools.

3. Transportation, warehousing, and distribution of construction materials, ingredients and equipment.

4. All other industries which are directly or indirectly affected by the production of materials and ingredients.

Even this does not take into account all of the people who are favorably affected by school construction. Of those still omitted, the most important numerically are employees in architectural firms, utility companies and local government.

What it means

What does all this mean to your district? One answer is obvious—new school construction provides a tremendous economic shot-in-the-arm to the local community. Particularly in times of unemployment in the building trades, a new school can be a major factor in revitalizing a community.

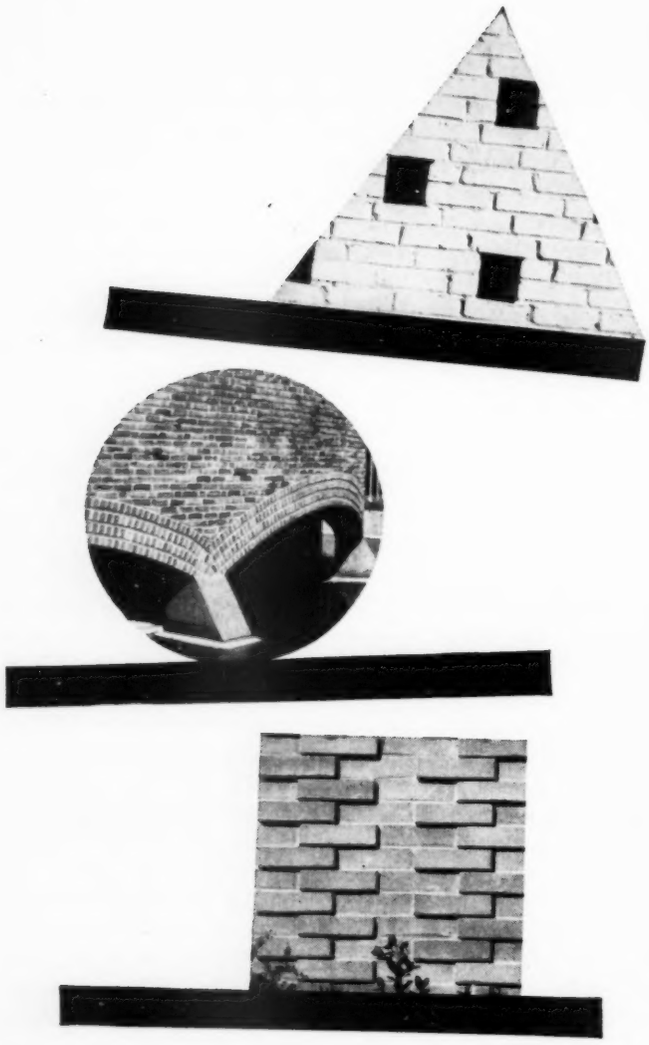
But new school construction means more than that. To the small merchants of a town—often the backbone of opposition to school spending—a new school means a better market for their products. They are the principal beneficiaries of the so-called "multiplier effect," not even considered in the BLS study.

New school construction directly benefits these businessmen. If they realize this, they will also realize that it is in their best interest to support school bond issues.

Certainly these are things your public ought to know. **End**

LISTED BY REGION, COST, SQUARE FEET AND PER CLASSROOM

North Central			South			West			
MAN-HOURS PER			MAN-HOURS PER			MAN-HOURS PER			
$1,000 of cost	1,000 square feet	Classroom	$1,000 of cost	1,000 square feet	Classroom	$1,000 of cost	1,000 square feet	Classroom	
82.6	1,129	2,902	99.0	1,199	2,587	80.6	1,149	3,099	..... All schools
78.9	1,126	2,136	105.1	1,122	2,006	75.6	1,013	1,986	..... Elementary
84.7	1,131	3,586	94.3	1,272	3,427	82.6	1,206	3,864	..... Secondary
77.9	1,102	3,007	94.9	1,208	2,778	82.1	1,220	3,197	..... In a metropolitan area
92.9	1,184	2,727	110.3	1,177	2,224	77.1	1,001	2,874	.. Not in a metropolitan area
									Construction cost group
98.4	1,256	2,260	96.1	958	1,650	77.7	1,012	1,812	.... $200,000 and under
90.8	1,131	2,322	98.6	901	1,526	79.0	918	2,024	..... $201,000-300,000
78.9	1,087	2,238	116.7	1,286	2,380	80.5	939	1,780	..... $301,000-$400,000
93.3	1,264	2,991	96.7	963	1,678	75.4	1,019	2,059	..... $401,000-$500,000
76.7	1,097	2,231	103.1	1,278	2,512	70.6	1,048	2,376	.... $501,000-$1,000,000
83.7	1,089	3,623	92.6	1,282	3,914	79.2	1,040	3,233	... $1,001,000-$2,000,000
(1)	(1)	(1)	(1)	(1)	(1)	86.6	1,374	4,916	.... $2,001,000 and over



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■ I suggest the following steps:

1. Have the weekly menu published in your local newspapers. Also, have this menu sent home with the child.

2. Have certain days set aside when the parents are invited to have lunch with the children.

3. Invite the parents to the kitchen so they can see the kind of food that is purchased, and how it is prepared and served.

4. Prevail upon the school principal, teachers and school nurse to set up posters showing the nutritive value of the cafeteria food, and have the faculty suggest to the children that they eat in the cafeteria.

QUESTION: What are the relative merits of conveyor-type dishwashers, and flight-type dishwashers? Is there a difference in initial cost? What about the time and expense of operation?

■ The difference in cost between a rack-type machine and a flight-type machine is considerable. I refer only to the machine, not to the room. A flight machine might cost twice as much as an automatic rack-type. However, there are other factors involved. When a flight (or peg) machine is used, savings are effected by the elimination of clean dish tables and by the reduction in soiled dish area. This, however, is not the principal argument of the flight machine. It is a question of man-hours.

In a small operation which requires one or two dishwashers, such as in the case of an elementary school or a small junior high school, the number of meals served probably would not warrant the initial expense of the flight machine. However, in a large high school, junior college or university where many hundreds of students are served, a high percentage of labor cost is saved by the use of the flight-type machine.

Many of the members of I.S.F.S.C. have stated

text continued on page 54

About the author. Richard Flambert is a partner in the firm of Flambert and Flambert, San Francisco, food service consultants and engineers specializing in schools and institutions. He is chairman of the board of the International Society of Food Service Consultants.

12:01 A.M. IN A "NEW LIFE" LIBRARY

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Photo courtesy of Stickney-Forest View Library, Berwyn, Illinois.

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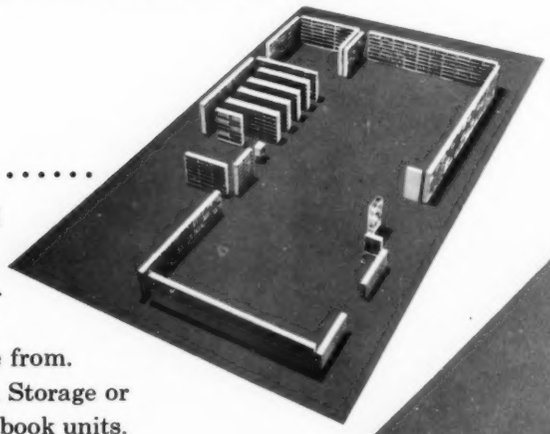

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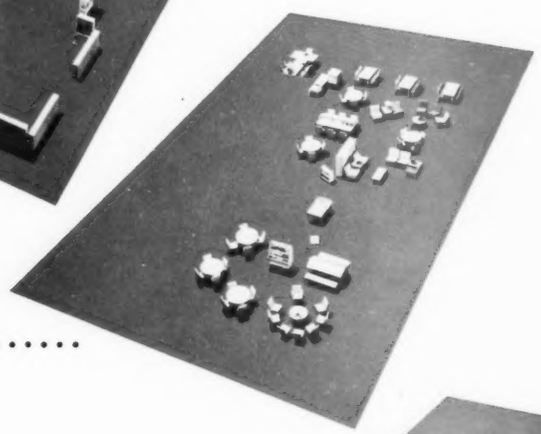

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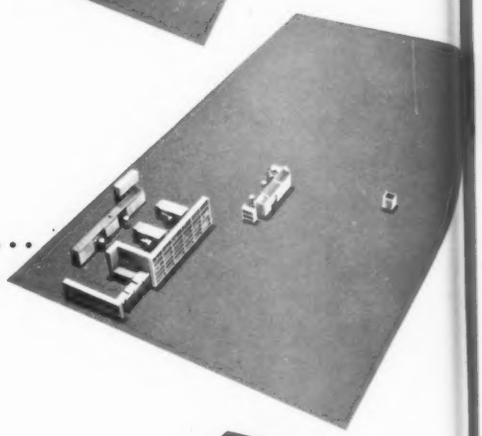

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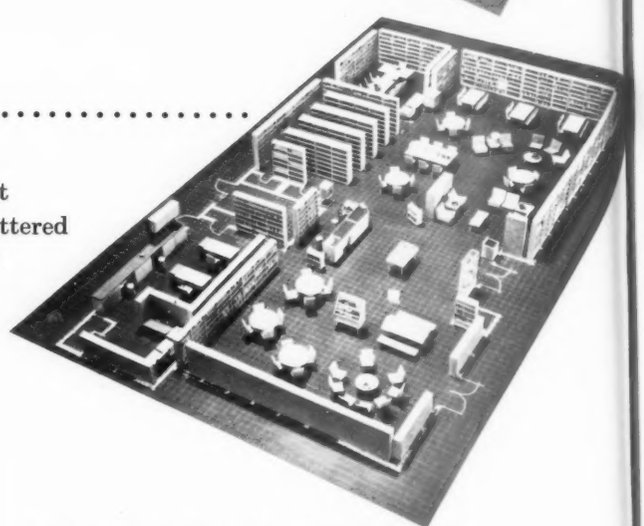

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Built on the "campus" plan, Olive Vista Junior High School in San Fernando contains some 50 classrooms, plus cafeteria, gymnasium, auditorium, multi-purpose room, and other special facilities. It is heated and ventilated by a combination of unit ventilators, multi-zone systems, and dual duct systems.

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Economy features of the system include weather-compensated control of the heat supply and automatic programming of heating and ventilating operations according to occupancy schedules. Being pneumatically operated, the Johnson System functions with a minimum of supervision and upkeep — an advantage that saves many man-hours because of the large area covered by the school.

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Even Hampden's thrift-priced chairs are unusually strong, good-looking . . . have costliest chair features. They are comfortable and safe — won't tip or tilt. Enamel bonded on . . . rust resistant. **WRITE:** Dept. B-5 **HAMPDEN,** Easthampton, Mass.

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(Circle number 727 for more information)

categorically that they would never design a school cafeteria dish room without installing a flight machine. They give as their reasons longevity, sanitation, maintenance and payroll savings. However, I do not go that far. I think that the installation itself would indicate which machine is better.

QUESTION: After lunch, many of our students take crackers and sandwiches with them to eat in class later. Our urgent pleas, asking them to stop, have been in vain. What can we do?

■ I should think you would be happy that the students like your food enough to eat it in class. Youngsters are always hungry. How do you make them stop? The only objection I have to eating in the classroom is when the food eaten is not good for the child's teeth or the digestive system. Candy is an example. Actually, I wish I were young enough to feel the craving for food in the afternoon. Don't you?

QUESTION: What is the recommended ratio of cafeteria personnel to students?

■ Our criteria for efficiency in school food services is the number of meals served per hour of labor. Before the advent of modern kitchens, the ratio was approximately 10 meals per man-hour. This has increased during the past 10 years to over 13. In central kitchens, the averages are a bit over 20. Actually, the major advantage of central kitchens is this matter of increased meals per man-hour.

The number of employees does not give a true picture of the operation, because some kitchen personnel work short hours; some, part-time; and some, a full day. In addition to this, there might be student help, which further complicates the ratio between people and meals. It is because of this great variance in hours worked that the formula of man-hours is used rather than people.

If an individual cafeteria serves up to 15 meals per man-hour, it is extremely efficient. If it serves fewer than 12, it is not.

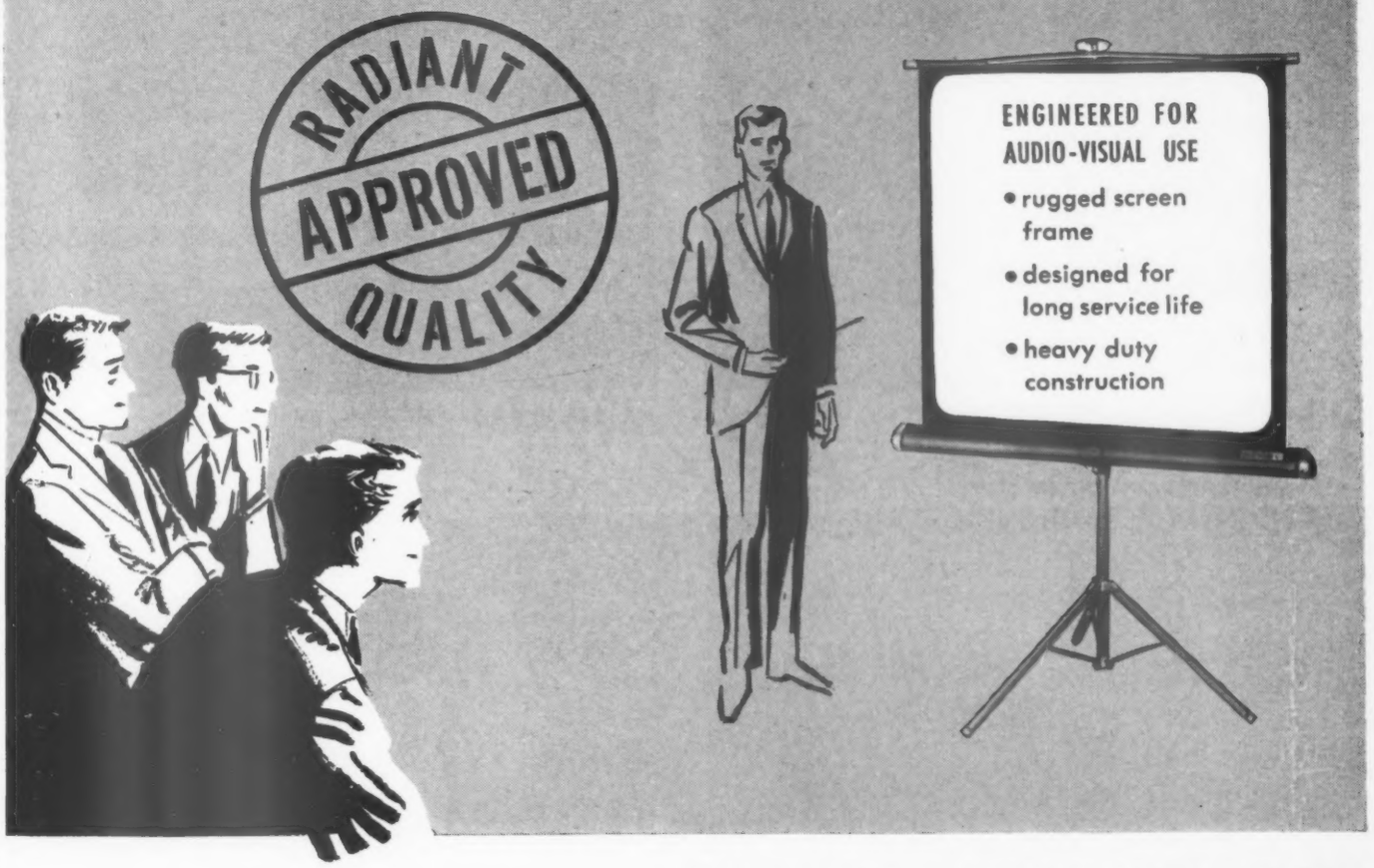
QUESTION: A salesman recently tried to sell our board on the value of music in our cafeteria during the meal hour. What's your opinion on the value and the expense?

■ The matter of the value of music has been discussed and cussed. To some extent, it is a matter of what kind of music and who controls it. Certainly, when a child is eating in a cafeteria his digestive system is not going to improve by listening to an Elvis Presley or a Satchmo Armstrong. However, records of symphonic and other soft music do have a soothing effect on a child and give him the peace of mind and the tranquility to enjoy his food and have an alert mind for the afternoon.

If a child likes music, this might keep him in the cafeteria long after he should be out playing. If he doesn't like music, he hurries through his meal to get away.

I do think that you might experiment with the piped-in music and then with the tape-recorded music for a few weeks and see if you notice any change in acceptability and participation.

There must be a reason why more schools specify RADIANT PROJECTION SCREENS



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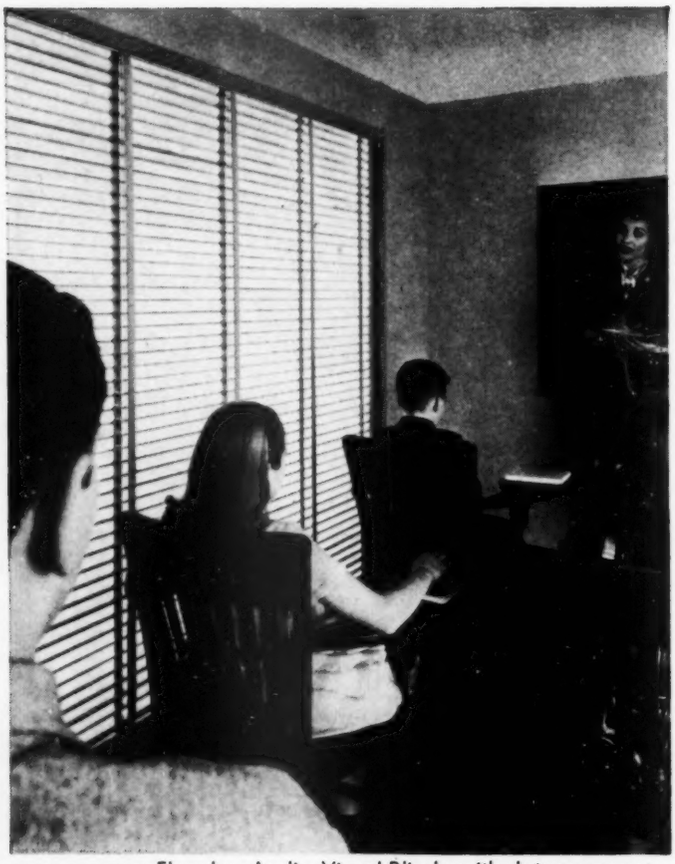
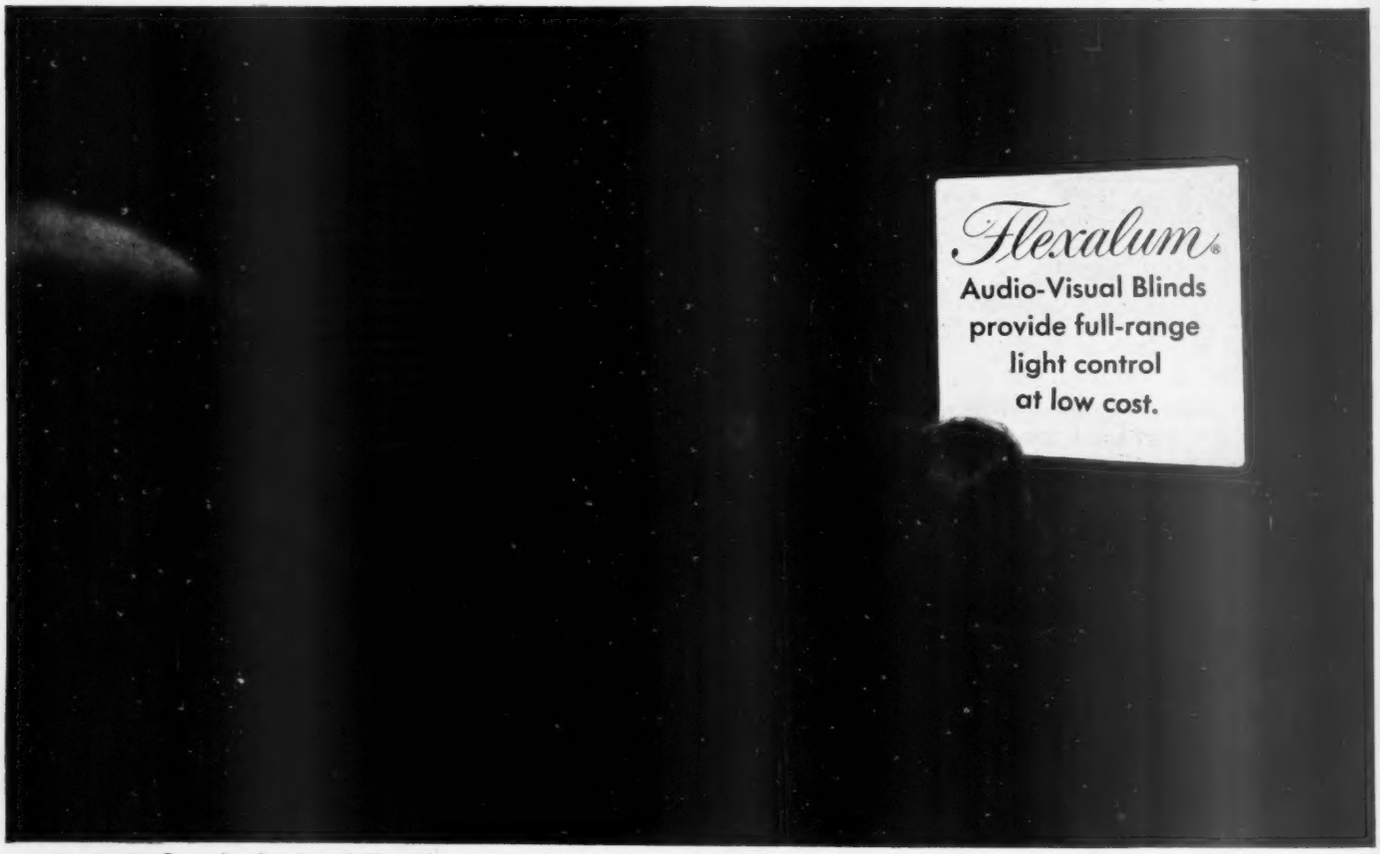


LIGHT Flexalum Audio-Visual Blinds, with slats open, provide controlled daylight without glare, plus ventilation, for ordinary classroom activities. The soft, diffused light is easy on the eyes . . . and dispositions.

MEDIUM Slats partially closed, give light enough for note-taking, yet darken room so projected slides of charts, etc., may be clearly viewed. Precision tilt mechanism with fine adjustment, affords exact degree of light needed.



DARK Completely closed Flexalum Audio-Visual Blinds give projection-room darkness. No light seeps in, thanks to light trap channels, and Flexalum's tighter overlapping slats. Projections of fine line drawings, microscopic slides, colored maps, etc., show up sharply on screen. All Flexalum Audio-Visual Blinds are fully guaranteed for five years, in writing.

Write for specifications to Bridgeport Brass Co., Hunter Douglas Division, 30 Grand Street, Bridgeport 2, Conn.

(Circle number 713 for more information)

NEWS OF THE SCHOOLS

A digest of current happenings in public education

Teachers' extra-pay duties may be cut in Ohio

In Ohio, a board of education may discontinue at any time an additional duty assigned to a teacher under his contract, and immediately discontinue the extra pay, according to Ohio Attorney General Mark McElroy.

The state attorney gave the opinion in response to a question from the Bellefontaine school board which had employed a teacher under a two-year contract, agreeing to pay him $5,100 for classroom teaching and $1,000 for duties in the athletic department. The board asked if it could discontinue the teacher's athletic assignment, along with the extra pay, before his contract expired.

"It appears that the intention of the Ohio General Assembly was to divide a teacher's income into two parts," Mr. McElroy said.

"The first is the base salary, the second is the supplemental salary allowed for additional duties."

He said Ohio law specifically permits the board to discontinue a teacher's additional assignment, and the additional pay, while his contract is still in force. The board is not required to give notice or hold a hearing on the matter, he said.

Vandalism officer is new school post

A new post, "security officer," has been created by the Jefferson County, Ky., schools to deal with the problem of vandalism.

A former police chief is the first man appointed to the $4,500 a year job.

The security officer will work with police and school personnel in an attempt to cut down on theft and vandalism in the schools. In less than a year, petty crimes have cost the school system $13,292.

The security officer will be given the job of checking up on janitors who fail to lock doors and will be on 24-hour call. Persons living near schools have been instructed to call him if they see any suspicious activity near the school grounds.

Parents get go-ahead to teach children reading

The idea that parents should not —must not—try to teach their preschool children how to read, may be going out the window.

Schoolmen in Denver have just won $61,900 worth of recognition for a program they have been running to help parents teach their children how to read. The grant, made by the Carnegie Corporation, will help the Denver schools revise a handbook for parents. The book "Preparing your child to read," goes along with a 16-session television series on the same subject.

The Denver schools will use the money not to test whether parents should teach their children reading—it is assumed that they should and will—but to find out whether the parents do better with the book and television series than they would without them.

District deposits funds, makes bank paymaster

School employees in Shillington, Pa., no longer receive checks on payday. Instead, the board of education deposits the take-home pay due each teacher or other employee in a local bank and then gives him a "notice of credit," showing the amount of money that has been placed in his bank account.

The employee is able to withdraw part or all of his salary installment twice a month. Superintendent H. L.

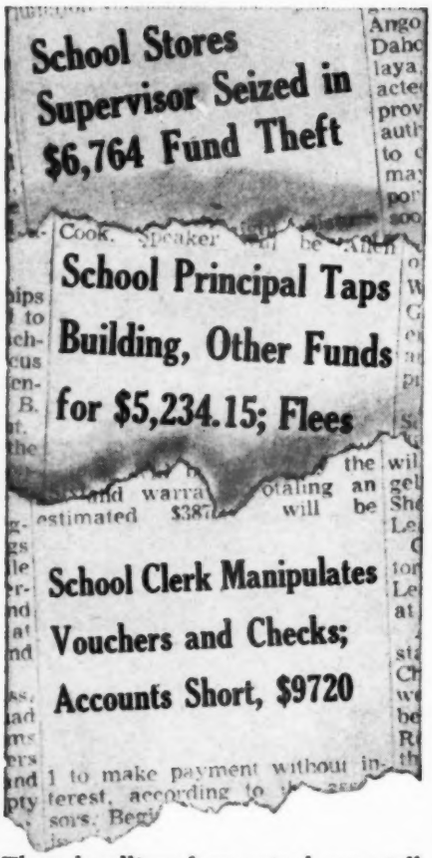
Too good to miss . . .

Too complex . . . Columbia College has suspended a compulsory sophomore course in "contemporary civilization." The reason: the world has become too complex for an ordinary professor to fully understand it. We thought so.

Weaker sex . . . The world may be getting complicated, but some things remain surprisingly simple. Take the case of the Denver man who learned that his daughter was the only child in her class who couldn't tie her shoelaces. When confronted with this fact, the five-year-old had a simple answer: "I don't tie my own shoes at school because the boys tie them for me." We're on her side.

He rejects . . . Superintendent C. Taylor Whittier of Montgomery County, Md., has just rejected a gift of an electric scoreboard for one of his schools because it would carry an advertisement for a soft-drink bottler. Montgomery kids will go on reading scores from their home-made hand operated jobs—and no time out for commercials.

To find "X" . . . We're impressed by the spirit—and honesty—of an Elmira, N.Y. woman who received a note from her daughter's teacher saying that the youngster was having difficulty learning subtraction. The mother wrote back that she'd be glad to help her daughter with her learning, "But which number do you subtract—the top or the bottom one?"


School Stores Supervisor Seized in $6,764 Fund Theft

School Principal Taps Building, Other Funds for $5,234.15; Flees

School Clerk Manipulates Vouchers and Checks; Accounts Short, $9720

These headlines from actual cases tell a hard-to-believe, yet true story of theft and dishonesty in schools. You can help protect your system through common-sense precautions and safeguards. Keeping all vouchers intact and matching them against cancelled checks is one prudent step. Another is to bond *all* persons responsible for school funds — officials, teachers and students.

Ætna Casualty offers a new *free* booklet that describes many other practical precautions you can follow to help safeguard your school system against dishonesty..Send for your copy *today.*

Let this New FREE Booklet suggest ways to protect your school system

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Please send me without obligation a copy of "How to Guard Against Dishonesty in Your School System."

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(Circle number 701 for more information)

Hendricks says the plan, which went into effect July 1st, will save the school district time, since the actual payroll is now prepared by bank personnel.

Arizona boards can send members to meetings

The Arizona Attorney General's office ruled June 28th that school districts could pay travel expenses for board members and teachers under specified conditions.

The ruling said expenses of board members could be paid for National School Board Association meetings, if unanimously approved by the board as for a school purpose.

Travel for teachers to National Education Association meetings is authorized if the teachers represent the principal or school superintendent, it was reported.

In either case, the opinion said board rulings would be subject to judicial review.

Eighteen states get federal land break

School districts in 18 states are eligible to benefit from a new policy of the Department of Interior. The policy makes federal land available for school building at $2.50 an acre.

Previously, state and local governments and nonprofit organizations wishing to establish schools had to pay up to 50% of normal market price for the land.

The Department has put a limit of 640 acres to be purchased within any one year.

The new price schedule will be of most benefit in 11 western states and Alaska, where federal land holdings are largest. Other states benefiting from the new policy are Minnesota, Louisiana, Florida, Alabama, Arkansas and Wisconsin.

Bus drivers charge vehicles are rundown

Two school bus drivers in Las Vegas, Nev., startled the board of trustees recently by charging that the buses they transport children in each day are "ill equipped, overloaded and poorly maintained."

Mrs. June Lund said in the off-

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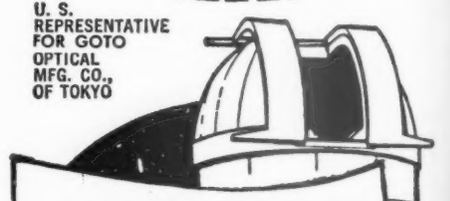

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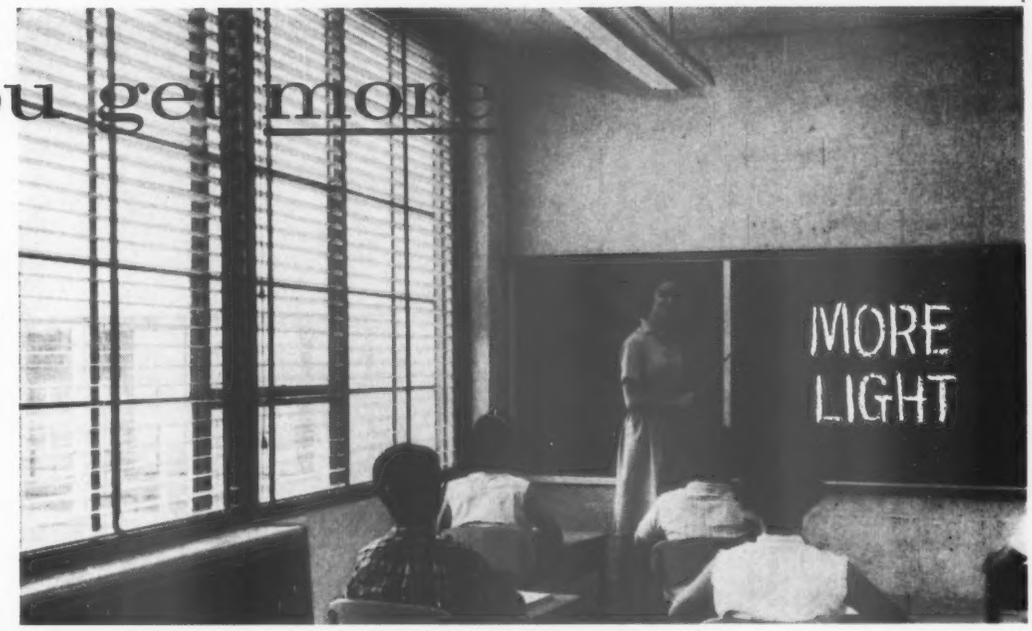

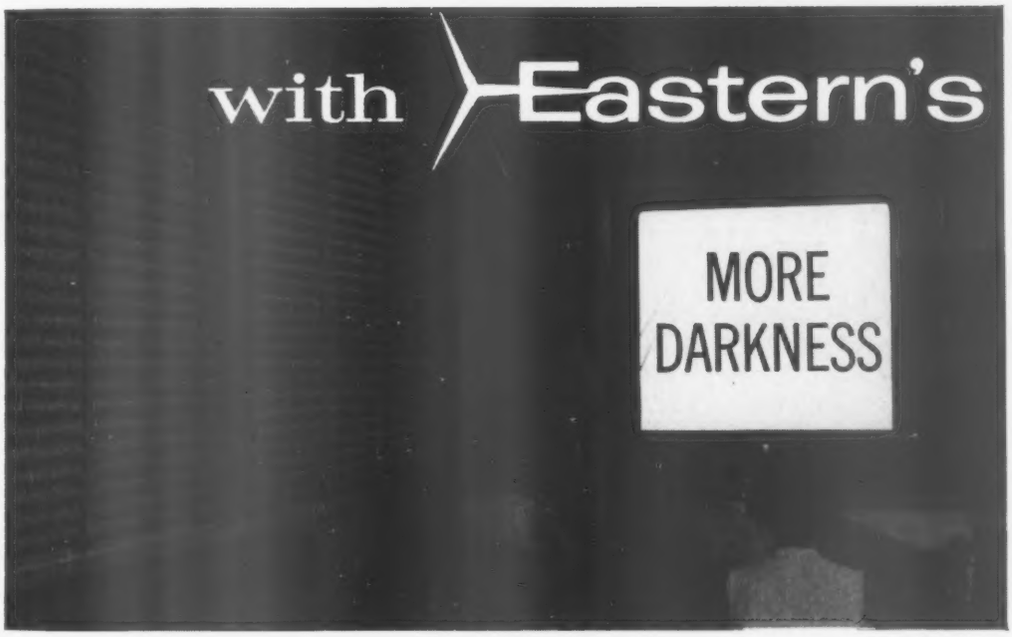

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Compact styling with big high quality features!

Now, for the first time, a Compact School Communications Sound System in full size metalware that is priced within your budget. Available in two models and four styles, the new DUKANE Compact School Communications Systems provide for administrative two-way communication, audio-education and centralized announcements. Structural and circuitry design provide for future expansion and flexibility. Emergency protection features are built into the new DUKANE Compact Line. Designed for continuous usage in today's multi-function school building. DUKANE Compact School Communications Systems are sold, installed and serviced by a nationwide network of over 300 local Sales-Engineering Distributors.

TWO MODELS—FOUR STYLES Two table-top or two console models provide every administrative communications convenience and audio-educational aid as standard equipment. Your choice of metalware with either single program/intercom channel or separate program and intercom channels.

Write for complete information

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Dept. SM-91, St. Charles, Illinois

(Circle number 719 for more information)

agenda discussion that she brought the matter to her supervisor's attention and was told everything was all right because there was an understanding with the police department.

Police Chief Leo Kuykendall said there was no such understanding, that "the police department does not make deals."

Mrs. Lund's charges were corroborated by fellow driver Frank P. Patterson. They said drivers were afraid to bring the matter to the trustees' attention because of possible loss of their jobs.

Schools cautioned against soil samples

School students who request soil samples for their biology classes may be asking people to violate federal law.

According to one official, the movement of soil is against federal plant quarantine regulations in many instances. That's because soil from infected areas can bring plant and animal disease organisms, insect pests, or microscopic eggs into uncontaminated regions.

The official, G. S. McIntyre, is director of the Michigan Dept. of Agriculture. He says he receives scores of requests from school children for soil samples.

Federal domestic plant quarantine regulations regulate the movement of soil when it is known to come from an area identified as contaminated. This quarantine covers most of the land area east of a line extending from Chicago to Houston.

There's no harm done while the soil sample is still in the classroom, says McIntyre. But the disease spores or germs can lay dormant for long periods of time, and there's a definite hazard when the soil is discarded.

Cleveland faces $1 million bill for retroactive pay

The Cleveland, Ohio, school board has been caught in a cross fire of court disputes over whether teachers should receive salary increments for time they spent in military service before they became teachers. The outcome will undoubtedly affect other Ohio school systems.

The controversy arose from an Ohio law, passed in 1951 and revised in 1959, that instructs school boards to grant up to five years' credit on salary schedules to teachers who had one to five years' military or class-

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room experience elsewhere before they were hired.

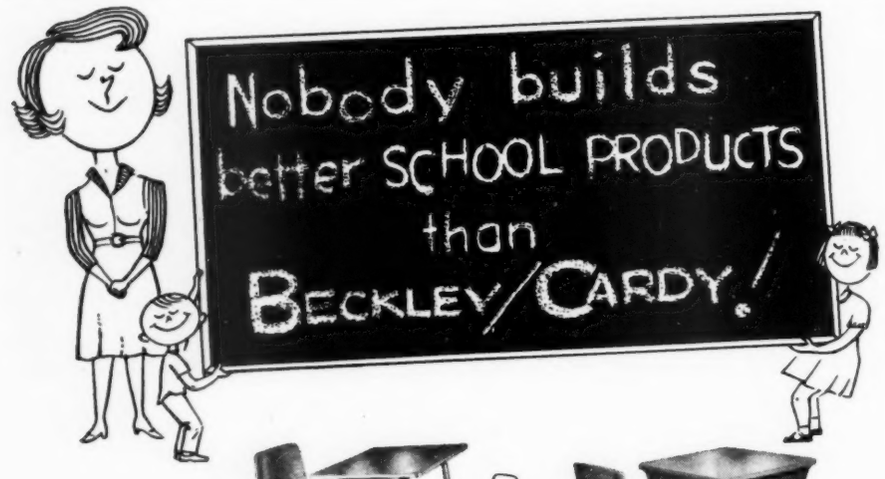
Most Ohio boards had been allowing salary credit for military service when it interrupted a teacher's career. But only a few paid attention to the law about prior military experience until a Cleveland high school teacher, supported by the Cleveland local of the American Federation of Teachers, sued the school board in common pleas court, and won a declaratory judgment.

The judge ruled that the Cleveland officials should grant the teacher two $200 increments for his two years of prior Army service, but granted the board discretion in the matter of the teacher's one year of classroom work in the Painesville, Ohio, schools.

The Cleveland board last spring advanced this teacher and 600 other military veterans on the salary schedule—at a cost of $300,000 a year—but did not grant them retroactive credits which might cost another $1,500,000 annually.

Another teacher, no longer in the Cleveland system, has filed suit for $2,300 for retroactive increments, which he contends he was entitled to, because of Army service, but did not receive while working for the Cleveland board from 1953 to 1959.

In opposition, a Cleveland taxpayer has brought action to appeal and reverse the common pleas court decision and stop all payments for prior military experience.



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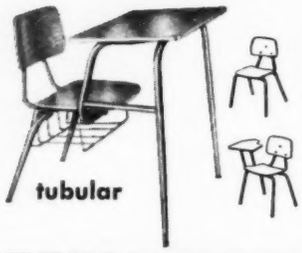

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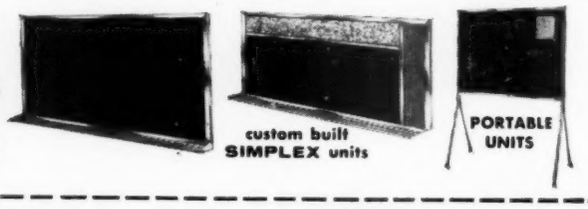

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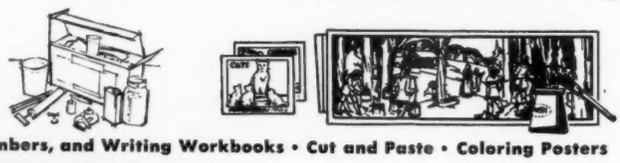

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(Circle number 769 for more information)

Discarded math books being sent to Africa

Within the past year a small group of Arizona citizens has collected some 100,000 replaced arithmetic textbooks, crated them and sent them off to Africa.

D'Arnold Davis, 43, chairman of the Arizona Books for Africa Committee, said, "We think this shipment will help us win the war of ideas."

The committee has been working since last May when Arizona schools decided to adopt a new set of arithmetic texts. The replaced texts created a problem in disposal.

W. W. Dick, state superintendent of public instruction, asked Arizona schools to send the books to Phoenix's National Guard Armory.

The Santa Fe Railroad is taking the books to Chicago gratis and will arrange for another railroad to move them to New York.

From there the U. S. Information Agency will take them to Africa and distribute them through our embassies.

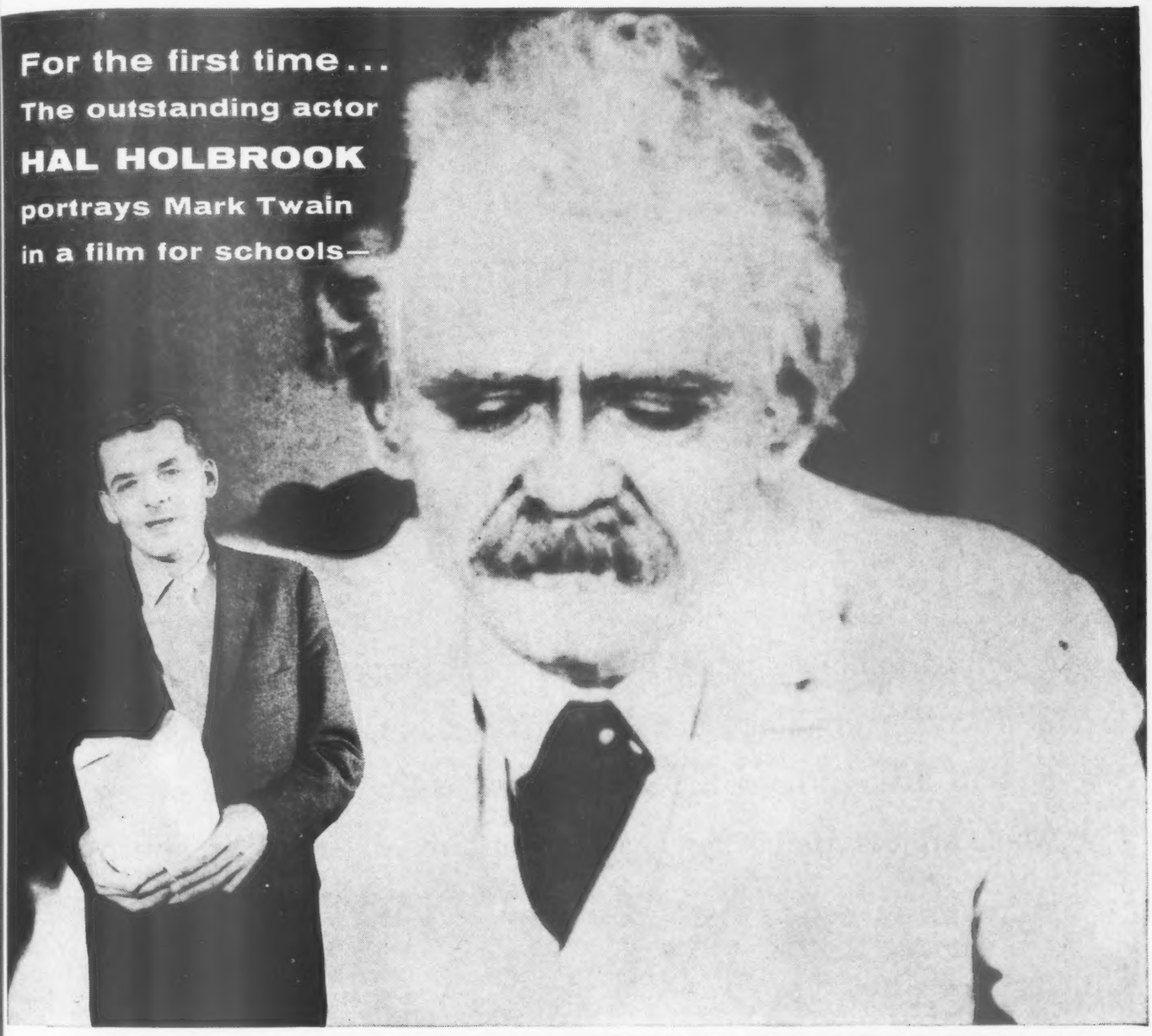
Cincinnati PTA's win right to foster views

PTA's in Cincinnati have the right to take stands on controversial issues. Such is the effect of a policy presented by superintendent Wendell Pierce and approved by the city's board of education.

The policy ruling came about as the result of a fight over fluoridation of the city's water. PTA chapters took a strong stand in favor of the issue, which was defeated at the polls.

Those opposed to fluoridation challenged the right of the PTA, as a school body, to take a position on a controversial issue.

In his ruling, Pierce distinguished between the schools themselves, which must remain "dispassionate," and the independent PTA councils. According to the policy, while administrators are members of the PTA, the administration of the school system "does not desire to control the thought or action of the parent-teacher associations."



"MARK TWAIN GIVES AN INTERVIEW"

Mark Twain—with all his mannerisms, wit, and humor—has been brought to life with startling reality in a new Coronet film featuring the master of Mark Twain characterization, Hal Holbrook.

Long before Mr. Holbrook's performance took the New York stage by storm, Coronet Films was concluding arrangements with him for an educational motion picture based on Twain's books and public utterances. For fullest authenticity, Mark Twain's words are taken from his writings, and Coronet arranged to photograph the film in Mark Twain's historic home—now a museum—in Hartford, Connecticut. Now available as *Mark Twain Gives an Interview*, it takes the form of replies to a series of questions asked by a narrator concerning Twain's views on his own life and writings and on such universally interesting topics as travel abroad, bad habits, honesty, and literature.

His answers are characteristically direct, pungent and witty, revealing his love for his life as a river pilot and how he became a silver miner, a gold miner, a newspaper reporter, a special correspondent abroad, and finally, "a scribbler of books and an immovable fixture among the other rocks of New England."

The performance re-creates Twain as he really was—warm, human, witty . . . capable of deep insight into the weaknesses and follies of people, but nonetheless understanding and sympathetic.

Every school—and especially teachers of American Literature—will prize this film for the insights it offers into the character of Mark Twain and for the authentic comments upon his own life and works. Students will consider it a rare privilege to see a favorite author mysteriously "come alive" through Holbrook's masterful characterization.

The film is available in a choice of either full color or black-and-white.

HOW TO OBTAIN "MARK TWAIN GIVES AN INTERVIEW"

This 1¼ reel, 16mm sound motion picture has a running time of 13½ minutes. It is available in full, natural color for $137.50 or in black-and-white for $75. It may be ordered on-approval for thirty-day consideration. If, within this period, you are not entirely satisfied with the contribution this outstanding film can make to your teaching program, you may return it for full credit—and all charges will be cancelled. Simply use the coupon.

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☐ Please send descriptive brochure.

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(Circle number 770 for more information)

How to hire
THE RIGHT ARCHITECT
for your district

Planning to build a school? Selecting the proper architect is one decision the architect, himself, can't make with you. But since he *will* make others, his appointment is the foundation of the whole project. Here's how one district hired the 'right' architect.

■ ■ ■ So you're going to build a school.

You've got a site. You know some architects who want the job. You know the community will back the project. Okay, you're all set.

Or are you?

Keep a couple of facts in mind. Building a school is a lengthy test of patience, virtue and good judgment. The district must be prepared to face one crisis after another. The problems will come in rapid-fire succession. Just as soon as one decision is made, something else will beg for attention.

A good architect can be a great help in making decisions, particularly if he has the interests of the district at heart. So, hiring the "right" architect, a man who *cooperates with* the district rather than merely *works for it,* becomes a matter of prime importance at the very beginning.

Hiring this man is one of the few major decisions that the school board and superintendent must make almost entirely on their own.

How can you be sure that your district is hiring the "right" architect? School officials in Greenburgh, N.Y., planning a new $3.5 million junior-senior high school, developed an orderly procedure that gave them a lot of latitude in picking an architect. Yet, it permitted them to select the one man in whom they had complete confidence.

Here's how they describe their selection process:

1. Be prepared.

Before the selection actually begins, your district must be able to present architects who are interested in the project with the facts

they will need to develop their ideas. Gathering these facts can be a joint effort of citizens' committees, educational consultants, the school board and the administration. What kind of school is needed? What facilities are going to be included? How much is the district willing to spend? This information enables you to be fair with all interested architects, and they'll need it to be fair with you.

2. Send out "feelers."

Once you have established the need for a new school, the news will get around. You'll be getting letters of inquiry from architects. Make a list of their names. Add to the list architects recommended by other districts, by contractors, and by educational consultants. To every name on the list, send an invitation to apply for consideration. In a short letter, tell everything you can muster about the new school based on the information you have just gathered. Include a proposed timetable (when you want to begin selection of an architect, when you expect to pick one, when you want to begin planning, when you expect to review specifications, let bids, etc.) Also send along a standard AIA questionnaire with each letter. When an architect fills out this questionnaire, he tells you whom to contact about his past work, his firm's fiscal responsibility, etc.

3. Eliminate disinterested architects.

As soon as the replies begin to come in, you can start crossing names off your list. Some of the architects will ask that they not be considered. Perhaps your time schedule catches them during a heavy work period. A national firm may not do business in your part of the country. Or, an architect may feel that your project is beyond his firm's capacity. Those architects who *are* interested, however, will send along brochures, photographs or other mate-

HOW TO RANK THE ARCHITECTS

Schoolmen in Greenburgh developed a point system for ranking architects. Under this rating scale, an architect or architectural firm could score a maximum of 110 points. The architect Greenburgh hired scored 95.

PROXIMITY of architect's office to project site:

0-50 miles	10 points
50-100 miles	8
100-200 miles	6
more than 200 miles	4

Total for proximity, 10 points maximum

STAFF in architect's firm:

Registered architects

10 or more	20 points
7-9	16
4-6	12
2-3	8
1	4

Maximum points for registered architects—20

Licensed engineers

Have own	10
Subcontract	5

Maximum points for engineers—10

Consultants

Full consulting staff	20
Food services consultant	5
Acoustical	5
Color	5
Site	5

Maximum points for consultants—20
Maximum point total for staff—50

EXPERIENCE in school work:

Secondary

More than five schools	20 points
3-4 schools	15
1-2 schools	10

Maximum points for secondary schools completed—20

Elementary

More than 10 schools	10
7-9 schools	7
4-6	5
1-3	3

Maximum points for elementary schools completed—10.
Maximum points for all school experience, 30. (A bonus of 10 points can be added if a firm has extensive industrial or commercial experience.)

BROCHURES, illustrations and other materials presented on original invitation:

Excellent	10 points
Average	5
Courtesy reply	1

Total for materials, 10 points maximum. Maximum possible score, 110 points.

DR. GEORGE FITCH
Supervising principal
Greenburgh, N. Y.

"Don't interview any architects until you cut the field."

rials in addition to their completed AIA questionnaires. Make a dossier for each of these interested architects.

4. Investigate.

From the AIA questionnaires you will know whom to contact about each architect's previous projects. Send letters to these "references"—contractors, principals, board presidents, superintendents. Ask frank questions: "Did architect Johnson create the building you wanted?" "After the school was occupied, did he return to evaluate the building?" The more questions you ask, the better the final appraisal. File answers in the architects' dossiers.

5. Rank the architects.

Now, the dossiers will be bulging with information. Evaluate it. A point system *(see box, page 65)* will be helpful. You should be able to get all the evaluative information needed from the dossiers. Every architect should be assigned a point score. Now you can begin concentrating on those who score well.

6. Interview "high scorers."

By this time you should have a good idea of who is, and who is not, in contention. Interview the top architects on your ranking sheet. (Roughly, this would be about 25% of the names on your original list.) Allow the architect to make his presentation before the board and other interested parties, then question him. You are now trying to find out if they have confidence in the man. At the close of each interview every board member should be prepared to recommend that the architect be eliminated, held as a possible finalist, or be seriously considered in final selection.

7. Re-evaluation.

At an open, informal meeting of the board and administration, narrow your choice of architects to less than a half-dozen. Have all your dossiers available. If there is any doubt in anyone's mind, now is the time to get the answers. To those architects who have been eliminated, write a short letter explaining that the selection process is continuing and that "your firm" will be considered if a choice cannot be made from among those architects now before the board.

8. Visitation.

Visit schools designed and built by the architects who are still in contention. Invite interested laymen along on these visits—engineers, craftsmen, plumbers, landscapers, etc. They may see faults or outstanding features which the board and administration might miss. Search carefully; these visitations should be more like inspections.

9. Final evaluation.

What did you find on your inspection trips? How did teachers like their classrooms? Were the sites drained properly? Was heating and ventilation adequate? Using this information, narrow your choice to one candidate and hold a few others in abeyance.

10. Final interview.

Ask your choice to appear once more before the board. Prior to signing a contract, be sure to go over the contractual details with the architect and your legal counsel. There must be complete understanding by both parties of all terms of the contract. If there's an element of doubt before the signing, you are still free to call in one of your other finalists. Although the board's decision to hire the architect need not be unanimous, it should be strong and confident. The architect you hire will need the board's cooperation—and you will need his.

This selection process was tried, tested, and found to be successful in Greenburgh. The school that the selected architect designed is nearing completion. It was a three-year project. At no time during its planning and construction, say school authorities, did they lose confidence in the architect's wisdom and judgment—and he was a

major influence in nearly every decision. They attribute their confidence in the architect to the careful manner in which he was selected over 34 other candidates.

In the following tape-recorded interview, a SCHOOL MANAGEMENT editor questions two of the key men who developed and used this selective process. They are Dr. George Fitch, supervising principal of Greenburgh School District #8, and Alden A. Larson, who will be principal of the new school when it opens. In the interview they explain why the selective process became necessary, how it works, and how it can be applied.

Q. Dr. Fitch, your method of selecting an architect is lengthy and complex. Wouldn't it be easier and just as good to retain a large, competent architectural firm that's done a lot of school work, and put everything in its hands?

FITCH: Yes, it would be easier, but not necessarily as good. Architects have personalities. So do school board members. Personalities clash. You must remember that an architect will be working with the board for two years or longer. A good working relationship is an absolute necessity. Our method guarantees us a good architect, just as hiring a large, experienced and reputable firm would, but we go one step further and pick a specific man whom we ourselves know and like.

Q. Why didn't you retain an educational consultant who knows which architects would work out?

FITCH: We did retain an educational consultant. He was able to describe the way different architectural firms worked and the types of architectural personalities that we were likely to encounter. But he did not pick an architect for us. That's our job.

Q. In your zeal to hire an architect who gets along well with people, weren't you likely to overlook a candidate who knows education's needs? Didn't you consider this important?

LARSON: Very important, but an architect's knowledge of education is a consideration only during the design stage, and the design stage is just a part of the project. Once the creative part of the job is over, it becomes a task force operation of draftsmen, engineers, specification writers, bricklayers, plumbers, etc., all headed by the architect. That's why we considered his ability to get along with people so important.

Q. Did you concentrate on hiring an experienced schoolhouse architect?

FITCH: Not exactly. We didn't exclude *any* architect, no matter how young or inexperienced he was in schools, as long as he was interested enough to respond to our invitation to be considered. You see, some architects—particularly those that have been in the school line for awhile—tend to leave their marks on a building. You can drive through the countryside and tell, just by the style of the building, who the architect was. A young architect, new to schools, is without this handicap. We weren't especially looking for young architects, but their ideas are often refreshing and we were willing to hear them. The school board found them enlightening.

LARSON: Naturally, an experienced school architect has the edge over the inexperienced. In the long run, the person who has built several schools, and has gone back to see them in operation, knows what a school needs and what it does not need. What we tried to do in Greenburgh was to find the experienced architect who had not fallen into a rut, at the same time keeping our ears tuned in to the younger men for the fresh approach which would meet our qualifications.

Q. How did you do this?

FITCH: We already knew what kind of school we needed. The educational consultant helped us with this. We had a site, 160 acres of donated property. To get architects interested in our proposed school, we wrote letters to every schoolhouse architect we knew or

ALDEN A. LARSON
Principal
Greenburgh, N. Y.

"Query references bluntly; get blunt, helpful answers."

who had been recommended to us. We told them everything we could about the school we wanted. We detailed the scope of construction, gave them our proposed time schedule, and sent along a questionnaire, approved by the AIA, to get information for our own use. There were about 35 names on our list in the beginning.

Q. Was all this necessary?

LARSON: The architects I spoke to were very appreciative. With the information they received about the project they could determine for themselves whether or not they wanted to take it on. If not, they told us so and we were able to eliminate them immediately.

FITCH: We were careful to examine every response from every architect. Some were just courtesy replies—from firms that could have taken on the job if they wanted to, but just weren't anxious to get involved. Those responses were just nice, polite letters. Other responses were more elaborate—from architects who looked at the site and made a real effort to be considered. At this point we informally divided the architects into two categories: those who *wanted* the job, and those who could take it or leave it.

LARSON: Here's where we began to concentrate on specific architects. We felt that in order to make an intelligent choice among those architects who expressed real interest, we needed more information. The returned AIA questionnaires weren't enough. But each questionnaire did have the names of contractors and school officials with whom an architect had worked before. We sent them mimeographed questions aimed at finding out how well the architect worked with a group of people.

Q. The same questions were sent to school officials and contractors?

LARSON: No, but the purpose was the same. We asked school officials questions like, "Was the staff architect planning satisfactory?" "Did the architect resist changing his preconceived concept of the school?" "Did the architect design the building to satisfy your educational requirements?" "Do you feel that the architect worked as hard doing the job as he did trying to get it?" Contractors were asked "Were there any delays caused by the architect?" "Would you bid on another project planned by this architect?" They were pretty blunt questions, but how else could we get blunt answers?

Q. Where does your point system fit into this process?

LARSON: Right here. We decided that in this particular building project there were several things which were significant to us. One was proximity. The closer the architect or his office, the better the communication between him, the school authorities, the project and the community. So we would give him more points than an architect who worked out of St. Louis, for example.

Q. Suppose the St. Louis architect would set up a field office in Greenburgh?

LARSON: There were several architects who suggested this. We used their home offices to figure the point credit unless their field offices were more than shacks set up at the project site.

FITCH: There are three other major factors on the point scale. Size of the architectural firm's staff counts the most points, then experience, then the materials he uses to show his interest in the project.

Q. Why does the firm's staff count so much? You're only dealing with one man who's responsible for the entire project. Doesn't this practically eliminate the man who works alone?

FITCH: Let me explain. The "staff" portion of the point scale is broken

text continued on page 130

"Picking a personable man is the most important factor. Consider this first and finally."

FITCH

WORKSHOP FOR SCHOOL MANAGERS

How to prepare a NEWS RELEASE

It doesn't take an expert to get good publicity. News releases can do the job for you if they are informative, timely and properly prepared. Here are some practical suggestions for catching an editor's attention.

Editor's note: *A new profession is growing up in postwar America —the profession of management.*

"Workshop for School Managers" is designed to bring to our readers the best and newest ideas in management techniques. Some articles in this series will be based upon work done by leaders of business and industry. Some will be based on good management policies developed in schools. Others will be concerned with improving techniques. All will help you to increase your value as a school manager.

■ ■ ■ Do you want good relations with the local press? One thing *not* to do is follow this example:

Two small districts in southern California were planning to consolidate. Superintendents and school boards spent months working out all the details. Just before the consolidation was to take place, they alerted newspaper editors to the change. But school officials practically had to beg for attention in the press. Why?

1. The editors were indignant. They wanted to know why they hadn't been told of the planning earlier, so they could have done the districts justice by printing several stories as the situation developed.

2. The editors weren't given the proper information. They didn't have enough facts—or the right ones—to develop even one good story.

Poor timing and poor information. These two elements have destroyed more good press relations than anything else. Most editors should be taken into your confidence, because most are interested in doing a fair and accurate job.

Good press relations can be promoted more easily than you might think. Most editors are willing to print stories if the schools cooperate with them. The question is, how?

One way to cooperate with newspapers (and radio stations) is by preparing good news releases. Editors are constantly looking for news and feature articles to fill their columns. They like local news. But they resent receiving poorly prepared stories which must be rewritten or discarded. And they resent not being informed of good story possibilities.

Actually, the techniques of preparing a good news release are not difficult to master. Here are some

Accomplishments of students are often newsworthy

helpful tips, as outlined by Ruder & Finn, Inc., public relations counsel:

Know what makes news

A district doesn't have to consolidate to "make news." Many of your district's daily activities, or even your own personal activities, have news value. Here are some examples: purchasing new equipment; hiring new teachers; school official speaking at civic club; teachers visiting another district; student accomplishments; faculty awards and promotions. A board meeting is usually a source of many good news articles—proposals, resolutions, etc.

Be sure, however, to weed out the trivia from the genuine news. No editor should have to do this for you. A good rule of thumb is: "Is the news timely and of interest to the general public?"

Another tip: names make news. People like to read about their friends and neighbors, as well as what's happening to their tax money.

Gathering the news

There's probably someone in your district who's well qualified to gather and report news. He may be the superintendent, a principal, teacher or even an interested citizen who works with the press in his business. Many districts have found that high school English teachers make very good "reporters." One obvious choice would be the faculty advisor to student publications.

The news gatherer should be supported in his task in every possible way. Give him assistance—financially and personally. He should be kept informed of district policy and procedures. He should have access to the superintendent so he can suggest story ideas and get facts. If required, see that he is provided with photographic services, duplicating machines, etc.

Good photos help a release, but don't pose them

Writing the release

A news release should be short and to the point. Editors say that releases no longer than two pages are more likely to be considered than those which are lengthy and cluttered.

The first sentence should tell the whole story in a nutshell, and the first paragraph should contain all the basic facts—who, what, where, when, why, and how. The following paragraphs, written in short sentences, should unfold the additional facts in an orderly sequence. Remember, you are telling a story to the general public—not writing a doctoral thesis. Keep your writing simple and to the point.

Once it has been written, it should be carefully edited so that no tangential or unnecessary details have been included. You have more leeway if you are writing a feature release, which can be as long as necessary and need not follow journalism's classic "pyramid" style.

To avoid the distribution of inaccurate information, establish a procedure for the approval or clearance of all releases.

Many business firms, advertising and public relations agencies write their releases on prepared forms which carry basic information at the top of the page. The forms themselves are not recommended for schools, but the presenting of information is. The information should include the date of the release; the name, address and telephone number of the district or superintendent's office; and the name of a person in the district whom editors can call to get additional information. You can just type in the information on each release.

If it's trivia, don't waste your time.

Remember, you are writing a news release—not a doctoral thesis.

Editors must write their own headlines, so leave some space for them to do so between the information at the top of the page and the first paragraph of the story. A good rule is to start the release about halfway down the first page.

Using photographs

Photographs can add measurably to the effectiveness of a news release, provided they are applicable to the story and of good quality. Candid, action photos are good; stilted, posed ones are not. Simplicity is important. If the story deals with an individual, for example, just provide the editor with a head and shoulders portrait, one which is not too formal.

News photos should be printed with sharp contrasts. Whenever possible, they should be full size —eight inches by ten inches—and printed with a glossy finish. This insures good reproduction on newsprint.

Every picture should be captioned. Individuals should be identified. Paste or tape captions to the back of the pictures so that they are secure, but won't tear when removed.

Distributing the news

Any news release is worthless unless it is distributed properly. If you are mailing the release, send it with a brief covering letter to introduce the story. If you are including photographs, be sure to put heavy cardboard in the envelope to protect them. Never use a paper clip to fasten photos to the release. A clip may mar the finish of a picture.

Try to mail your releases to a name, rather than just "Editor." Many newspapers assign a staff man to cover all school news. It will be worth your time to call him first and let him know you are sending a story. Sometimes this person will help you prepare the article, give you ideas for photographs, or ask for additional information.

Timing

Always put all of your releases in the mail at the same time, so that no one newspaper will get a "scoop" on another. If your area has both evening and morning papers, favor them alternately.

And if you have prepared an "advance" release, make sure you get it to editors well before the actual event, not the same day.

Throughout the whole process of preparing your news releases, keep one thought in mind: don't send out volumes of worthless information. Editors are just as busy as superintendents, and they resent spending time reading material that eventually fills their wastebaskets. **End**

Short releases get more consideration than long ones

Are your schools FIRE SAFE?

More than half the country's schools contain some fire hazards. These conditions are not only perilous—they may be the cause of high insurance rates. Here's a checklist to help you uncover them.

■ ■ ■ Your district may be paying more for fire insurance than necessary. Better than half the districts in the country are, simply because their schools contain deficiencies in fire safety.

Every year, there are about 4,300 fires *in schools alone*. Admittedly, most of these are minor, but in 1958, for example, there were 33 fires resulting in damages of more than $100,000 each.

These facts tell why fire insurance rates are higher than they ought to be. Rates are based on statistics. The number of fires and the amount of damages determine the premium charged for any given type of construction. But in setting the rate for a particular school, an insurance company may assess extra charges if hazardous conditions exist. So long as these "hazard charges" can be kept out of the rate—by eliminating unsafe conditions or taking precautions—premiums will reflect only the risk inherent in the type of construction.

This means that no district must pay high fire insurance premiums just because the others do. In fact, one insurance company says that many districts could trim their "hazard charges" and reduce their premiums by as much as 50%.

Here's a case in point. Take two identical schools. Purchase the required number of fire extinguishers for both. In school A, place the extinguishers as recommended by your local fire department for reasons of safety and practical need. Then, train key people to use them. In School B, just spread the extinguishers around the building so there seems to be coverage. Don't train anyone in their use. Given these two situations, the insurance rates for School B will almost certainly be higher than for School A.

Here are three actual case histories showing how districts have reduced their risks and premiums by taking more than basic precautions:

■ A multi-story high school in Virginia used enclosed spaces beneath stairs for storage of maintenance and cleaning materials, some of which were combustible. The spaces were protected by sprinklers, but when the waxes, oils, rags and paints were removed to a shed behind the building, the district realized an 8% saving in its premiums.

■ A Pennsylvania school board voted to rewire the four vocational shops in a high school. Additional fire extinguishers were installed. Then, boys were briefed on fire regulations and told how to sound an alarm. Shop instructors were shown how to use fire-fighting equipment to put out minor fires before they become major ones. As a result, the potentially hazardous shops are insured at the same rate as the rest of the building.

■ When a Kansas elementary school was ready for painting, combustible interior finishes were covered with a fire-resistant paint. The insurance premium on the school was reduced by $41.

One of the best ways to maintain fire safe schools is to inspect them regularly. It's elemental, but guaranteed to work if the inspection is conscientious. According to the National Board of Fire Underwriters, schools should be inspected each month. Corrected deficiencies should be brought to the attention of the insurance agent, who may be able to grant a reduction in premiums.

What do you look for on these inspections? A checklist of items, prepared especially for schools by the NBFU *(see opposite page)*, can help you reduce extra "hazard charges."

Using this checklist—and getting affirmative answers to all of the questions—will not automatically result in reduced insurance rates. But it will guarantee that your district is doing all it can to protect children in the schools.

Copies of the inspection form may be obtained from the NBFU, 85 John St., New York City 38. In the Midwest, address requests to 22 W. Adams St., Chicago 6; on the West Coast, 465 California St., San Francisco 4.

INSPECTION BLANK FOR SCHOOLS

Date .....Name of school ..... Address .....

..... Type (elementary, junior high, senior high) ..... Capacity .....

Number enrolled ..... The following items should be checked monthly:

1. Are all exterior exit doors equipped with approved panic locks?.....Are these locks tested each week to insure ease of operation? .....

2. Are all outside fire escapes free from obstructions and in good working order?..... Are they used for fire drills? .....

3. Is all heating equipment, including flues, pipes and steam lines:
   (a) in good serviceable condition and well maintained? .....
   (b) properly insulated and separated from all combustible material by a safe distance? .....

4. Is coal pile inspected periodically for evidence of heating? .....

5. Are ashes placed in *metal* containers used for that purpose *only*? .....

6. Is remote control provided whereby oil supply line may be shut off in emergency? .....

7. Is outside shut-off valve on gas supply line provided? ..... Is it readily accessible? .....

8. Has automatic heating equipment been serviced by a qualified serviceman within the past year? ...

9. Are the following locations free of accumulations of wastepaper, rubbish, old furniture, stage scenery, etc.? attic?..... basement?..... furnace room?..... stage?..... dressing rooms in connection with stage?..... other locations?..... (Explain **No** answers under **Remarks.**)

10. Is the space beneath stairs free from accumulations or storage of any materials?.....

11. If hazardous material or preparation is used for cleaning or polishing floors: Is the quantity limited as much as practicable? ..... Is it safely stored? .....

12. Are approved metal cans, with self-closing covers or lids, used for the storage of *all* oily waste, polishing cloths, etc.? .....

13. Are approved safety cans with vapor-tight covers used for all kerosene, gasoline, etc., on the premises? ..... Is it essential that such hazardous materials be kept on the premises? .....

14. Are premises free from electrical wiring or equipment which is defective? .....
    (If answer is **No,** explain under **Remarks.**)

15. Are only approved extension or portable cords used? .....

16. Are all fuses on lighting or small appliance circuits of 15 amperes or less capacity? .....

17. Are electric pressing irons equipped with automatic heat control or signal and provided with metal stand? .....

18. Are sufficient proper type fire extinguishers provided on each floor so that not over 100 feet travel is required to reach the nearest unit? .....
    In manual training shops and on stage, 50 feet? .....

continued on next page

19. Have fire extinguishers been inspected or recharged within a year? .....
Is date of inspection or recharge shown on tag attached to extinguisher? .....

20. Is building equipped with standpipe and hose having nozzle attached? .....
Is hose in good serviceable condition? .....

21. Where sprinklers are installed: Are all sprinklers clean and unobstructed? .....
Are all sprinkler valves open? ..... Has the system been thoroughly inspected within the past year? .....

22. Are large woolen blankets readily available in kitchens and science laboratories for use in case clothing is ignited? .....

Remarks (Note any changes since last inspection)

The following items to be included in each quarterly inspection:

23. Building construction: walls..... floors..... roof..... no. stories..... no. classrooms .....

24. State sections of buildings equipped with automatic sprinklers. .....

25. Are there at least two means of egress from each floor of the building? .....
Are these so located that the distance measured along the line of travel does not exceed:
from the door of any classroom, 100 feet? .....
from any point in auditorium, assembly hall or gymnasium, 100 feet? .....

26. Are all windows free from heavy screens or bars? .....

27. Do all exit doors open in direction of exit travel? .....

28. Are all interior stairways enclosed? .....
Are doors to these enclosures of automatic or self-closing type? ..... Are they in operable condition? ..... If automatic closing type, are they closed as routine part of fire exit drill? .....

29. Are windows within 10 feet of fire escapes glazed with wire glass? .....

30. Are manual training, domestic science, other laboratories and the cafeteria so located that a fire in one will not cut off any exit from the building? .....

31. Are heating plant and fuel supply rooms cut off from the main corridors and other parts of the building by fire-resistant walls, floor and ceiling assemblies and doors? .....

32. Do all ventilating ducts terminate outside of building? .....

33. State type of construction of any temporary buildings in school yard. .....

34. Is nearest temporary building at least 50 feet from main building? .....

35. State frequency of fire drills. ..... State average time of exit. .....

36. Are provisions made for sounding alarm of fire from any floor of building? .....
Is sounding device accessible? ..... Plainly marked? .....

37. Give location of nearest city fire alarm box. .....
Give distance from the premises. .....

TRENDS IN SCIENCE FACILITIES

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DURING the first two years of the National Defense Education Act, more than $108 million, half of it federal funds, was spent to improve the teaching of science and mathematics in the public schools.

According to the National Science Foundation, schools of all types must spend *$50 billion* more to expand scientific teaching in the United States during the next decade. The bulk of this spending will have to be done by the public schools.

But spending money does not guarantee improvement. Fifty billion dollars spent without thought, planning or understanding, will result in $50 billion worth of confusion.

How can schools improve their science teaching? What are the new ideas in curriculum? In equipment? In space? Where can your district get detailed help in planning for—and executing—the new ideas in science teaching?

On the following 23 pages, the editors of SCHOOL MANAGEMENT present a series of six articles designed to summarize the new trends in science, and to aid your district in finding the help it desires and needs.

How to plan high school science facilities

Space—lots of it—is the key to planning good science facilities. In Pelham, N.Y., officials had space. Here's what they did with it—and why.

■ ■ ■ "For too many high school students, learning science is a process of listening to lectures, watching demonstrations and performing 'cookbook' experiments. They have come to depend upon teachers to show and tell.

"The result is that there's too little opportunity for youngsters to find out things for themselves.

"This is neither good teaching nor good science. Teachers as well as administrators know this, and realize that students must be taught how to use the scientific method to discover the basic scientific principles. Until this takes place, students will never become good scientists, or good science students."

This is the opinion of Radcliffe Morrill, superintendent of schools in Pelham, N. Y., where new science facilities designed to facilitate a breakaway from this sterile method of teaching are under construction.

Traditionally, high school science instruction has been divided between the lecture and the laboratory. What the student studied in class, he tried to apply in lab—or he saw applied by the teacher.

"We want to give students more than a mere accumulation of scientific facts," Morrill says. "Our new science facilities are designed to enable students to learn for themselves. Using these facilities, they will be *told* less, but will *discover* more.

"Each of our science rooms will be both a laboratory and a classroom. Laboratory tables are arranged about the walls. In the front of a room will be a large demonstration table, equipped with closed-circuit TV. A service table will be at the other end. The whole middle of the room is open for student seating on tablet arm chairs, or it can be cleared for demonstrations or experiments requiring lots of space."

Students will spend most of their time in their work areas, which are equipped with the basic necessities of gas, water and electricity. For a class lecture, they will move their chairs into the center of the room and face the demonstration table or television monitors.

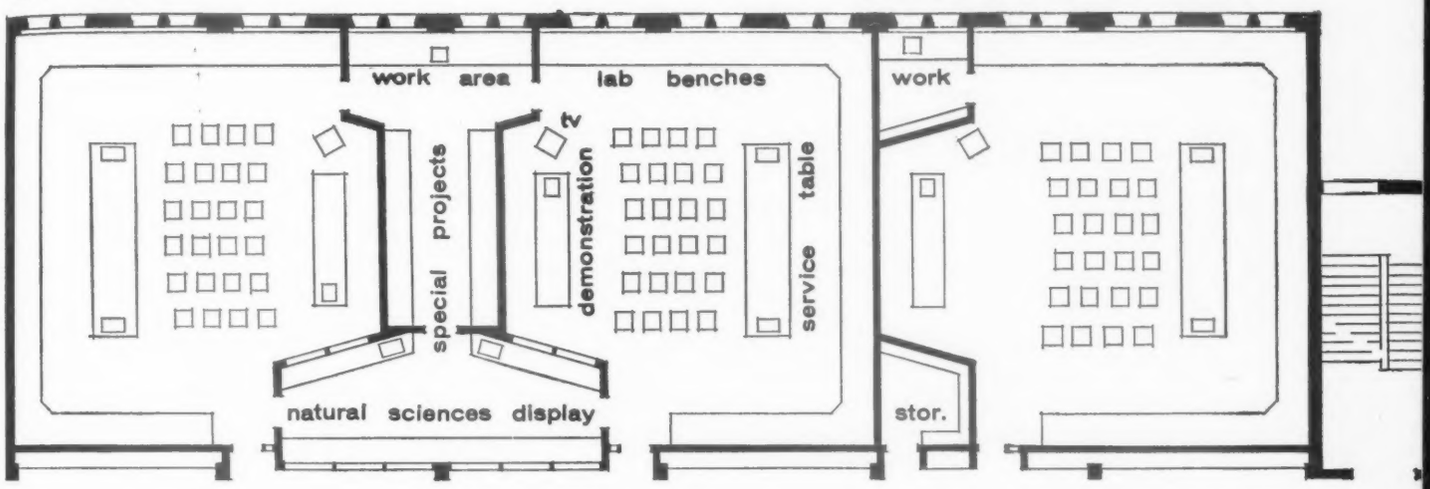
Pelham is building these facilities on the top floor of a new high school wing. The entire floor will be devoted to science rooms —two for biology and one each for general science, chemistry and physics. (There will also be a room for large group instruction on the floor below. Accommodating up to 225 students, this room will be available for lectures and demonstrations by "master teachers" or by visiting specialists.)

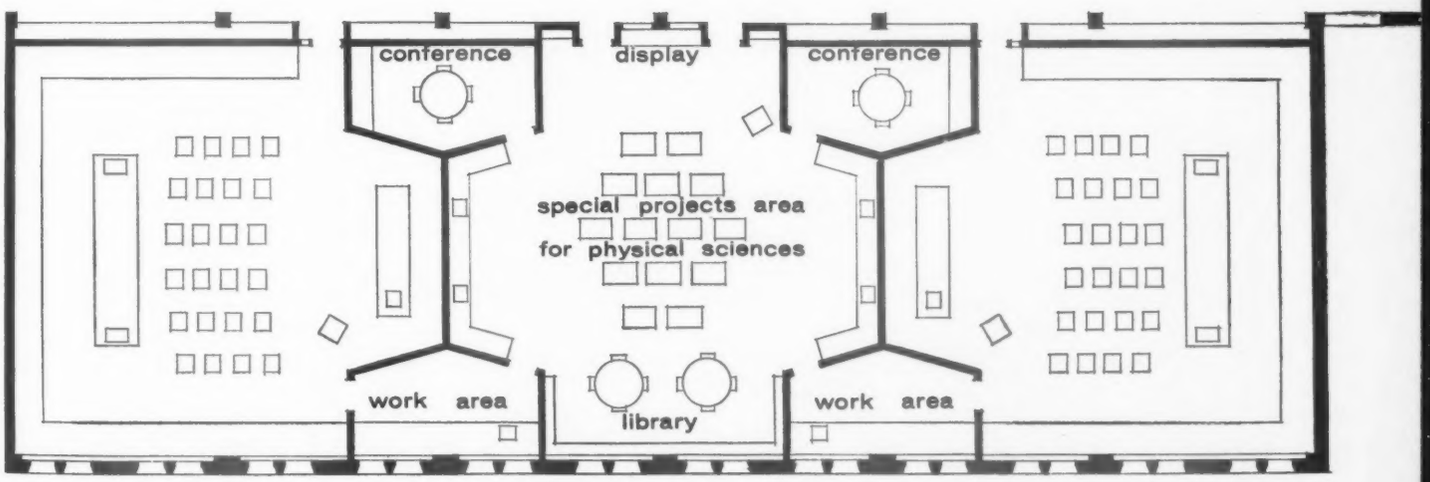
On the top floor, the physics and chemistry rooms are located on the same side of the corridor. Between these two rooms there is a large area in which students can work independently on assignments or projects. It takes the place of a conventional study hall. In this space is located a library and reference area, and individual booths where students can use audio-visual aids or work with teaching machines. Along either side are lab benches equipped with utilities, and large storage areas where pupils can keep on-going experiments. An enclosed area provides the opportunity for several students to tackle a problem together.

The general science room and

BIOLOGY

GENERAL SCIENCE





PHYSICS

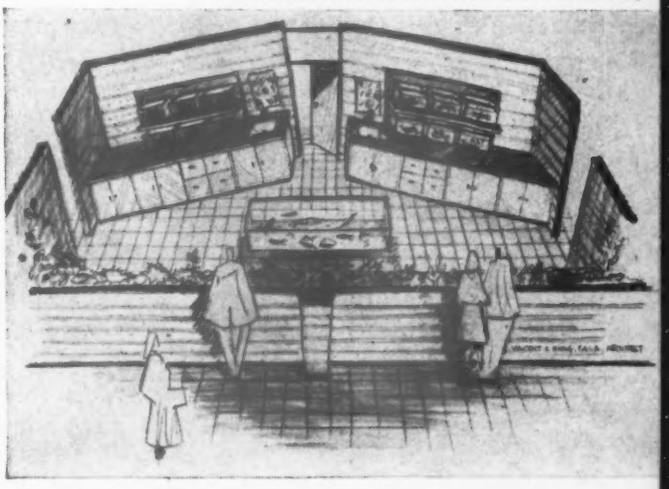
vincent g. kling, faia, architect

CHEMISTRY

DRAWINGS COURTESY VINCENT G. KLING, F

Entire floor of new wing is devoted to science labs and auxiliary spaces. Note areas for independent work, special projects and conferences.

Display area has glass wall to stimulate interest in student projects. Room has controlled heating, humidity and temperature.



two biology rooms are on the other side of the hall. These rooms also have the peripheral arrangement of lab furniture, but between the two biology rooms is an area which differs from the others. It's in the shape of a dumbbell, with one wide part adjoining the corridor and the other adjoining the outside wall. The narrow area in the center includes long benches for extracurricular biological experiments. Ovens, incubators, refrigerated compartments, cages and other fixtures are located there.

The wide portion of the dumbbell next to the corridor is a working display area. It has a wall of glass, so students passing by can look in on experiments involving plant life, insects, animals, water life—all being grown or displayed with explanatory notes. This area will have artificial light, and controlled temperature and humidity.

The other end of the dumbbell will provide an additional work area for individual student projects not requiring a specialized growing area.

These facilities are the core of the Pelham philosophy—that students must get their hands into the soil to appreciate the principles of botany, that they must stain their fingers to appreciate the principles of chemistry.

Planning of these lab-classroom combinations and all the other spaces was aided by a grant from Educational Facilities Laboratories. The grant enabled Pelham to ask some top educational consultants and science educators to contribute their ideas. Teachers, too, played a major role.

How are good science facilities planned? To find out, SCHOOL MANAGEMENT editors interviewed Mr. Morrill and educational consultant Stanton Leggett of Engelhardt, Engelhardt and Leggett, who helped the district produce practical plans from the ideas presented. Here are their tape-recorded replies to questioning.

"Teachers invariably have good ideas on how to plan space profitably."

MORRILL

Q Mr. Morrill, how can a district justify spending large sums of money for modern lab facilities knowing that within a few years everything may be obsolete?

MORRILL: The lab facilities of science, when you really analyze them, get down to being so many feet of working space—linear feet of work space per student—and the services that go with them: water, gas, electricity. These things don't get obsolete. In designing our science labs, we have tried to incorporate just as much flexibility into them as possible. We can make a lot of changes inexpensively within this present setup. But most changes will be in the kinds of equipment that are used. I don't see anything in this floor layout that will have to be discarded.

LEGGETT: It's important that you don't get mystical about science labs. They are really nothing but work surfaces with gas, water and electricity, and storage.

Q. Then you're distinguishing between the lab itself and the equipment which might go into it?

MORRILL: That's right. The whole problem of science gets down to where you put the work surface. Most of the *equipment* has a limited lifetime anyway. So, periodically, you're replacing this equipment. And, naturally, when you replace it, you replace it with the most forward looking material available.

Q. How do you plan this space so that it does not become obsolete?

LEGGETT: Plan it in large enough sections so you can make any changes you need. We are reasonably sure that in most of the sciences we are going to expect students to manipulate more apparatus and do more individual work. The lab will have a limited number of students using it at any one time. If you have enough space, you can do virtually anything you want.

Q When a school is planning to build or revise its science area, what are the basic things to be considered in the first stages?

MORRILL: Get your staff involved. This may sound like a cliché, but

it's a cliché that's too often ignored. The staff, after all, knows best what is to be taught, who will teach it, and how. Invariably, teachers have all kinds of ideas of what they would like to do if they had the space and facilities to do it. In most cases, a teacher who is really dedicated wants a lot more of something he doesn't have. By getting in on the planning, when there is the possibility of getting some of these things, he immediately becomes excited and gets all sorts of ideas.

Q. How practical are these ideas?

MORRILL: Some are extremely practical; some are not. But this is the first step. Now, you cannot expect to pull yourself up by using only the talent and abilities within your staff. You need to bring in other people who have had different kinds of experiences so you can balance what your staff contributes and enlarge the whole scope of your planning.

Q This is a technique of planning. What are the general areas that affect your planning?

LEGGETT: The scope of the courses. You can talk chemistry and I can talk chemistry, and we can mean entirely different things. Biology, for example, can be a classification subject as it was taught in the 1800's, or it can be a subject which is rich in its understanding of the processes of life. The old biology lab was full of display spaces for collection of specimens. The new biology lab has water, cages, and other facilities where you can really breed animals and grow plants—a different emphasis. Another factor is the number of students you're going to teach at any time. Are you going to have a team of four working on a project or one person working alone? If you're going to use a recipe book, you want a different lab than if you're going to ask students to explore the frontiers of knowledge. Then you've got the question of the extent to which you will have lab time. The common time allotment for science courses is four lab periods a week and three of lecture. We want to make sure we can move in a couple of directions. We expect some students to go far beyond others in the extent to which they put time into science. And, if they're going to put more time in, regardless of whether in the class or as individuals, then you have to have more student stations.

MORRILL: Almost every school can divide its student population broadly into three segments. First, there are those who are able to move into frontiers beyond what is normally taught to young people at this age. Some of these bright youngsters are being held back—they could go much further. We have to provide a program and facilities for them. Then, you've got your good, solid average youngster who will go through a typical program. Finally, you have a group of students who are not academically inclined. You have to provide them with a modified program. All three of these groups are going to use the labs. Even the slower students. As you know, the slower academic pupil is often the kind of youngster who needs to do more things—he doesn't learn as well from the printed page or from listening to a lecture. He does better when he can do something under close guidance and supervision. Some of these youngsters may eventually be trained to fill technical positions so badly needed to implement the work of the pure scientist.

Q. What courses are you planning to teach at the high school level?

MORRILL: All students will take

"Science facilities will not become obsolete if they are planned in large enough sections. Then you can do virtually anything you want."

LEGGETT

"Storage space should not be specialized."

LEGGETT

general science, at least two years between grades seven and nine, and biology in the 10th grade. Some, depending on their aptitudes and interests, will take courses in physics and chemistry. The more able students in the ninth grade will take what are normally the 10th-, 11th- and 12th-grade subjects. They will be through a year ahead and go on to an advanced program in chemistry, physics, biology or some combination of these sciences.

Q *Should science laboratories be planned for specific courses or in a way they could be used more generally?*

MORRILL: We have definitely planned them so that they could be used generally.

LEGGETT: Again, you're working with a length of work surface, plus the utilities that go with it. This is as specific as you should be. You may vary the amount of work surface—some will be for the physical sciences, which generally take a little more space than the biological sciences—but you're still dealing essentially in terms of water, electricity, gas and table tops.

Q. What else should be in the room besides these tables? Don't you need storage facilities?

MORRILL: Plenty. We have cabinets along the walls and underneath the benches where you can store small things, big things, student projects. This storage, incidentally, is not in a place where only the teachers can reach it. It is available to all of the students.

LEGGETT: The storage should not be so specialized that you can't change it. Anybody who says, "This is the only place to put a balance," is wrong. Suppose it was planned to have one chemistry balance for every four students and a specialized space was designed for them. Then comes the Speedo-gram and instead of having all these old balances, one or two of the new ones will do the same job. Then what do you do with all the carefully planned storage space? Equipment will change 100 times as fast as the basic concepts of work surface.

Q. So your science rooms include storage and student work space. Does this pretty much complete them?

LEGGETT: We felt that the science rooms in Pelham should be designed for both classwork and labs. My feeling is that the give and take between the instructor and students allows them to use their time a little bit better when there is demonstration and discussion in the lab. Consequently, a demonstration station is needed. This is simply another piece of work space that is larger because it is frequently used for more complex experiments.

Q. How many students can these labs handle?

MORRILL: If there is a lecture or demonstration, we can bring 50 or 60 youngsters into one of these rooms. But when it is used for lab work, we do not expect to go beyond 23 or 24 students at most.

Q *Are you providing any space for individual work within the main labs?*

MORRILL: We have the special student work center. The critical factor is to increase the space where kids can work independently on projects not directly related to the assigned time of that science. They have other free time. We must find space outside of the assigned area for them—space so that a youngster doesn't come up to a free period and find that the chemistry lab is in use and he can't work there. To overcome this problem, we provided central work areas which are always available to students.

Q. These central work areas have all the facilities you would find in a regular lab?

MORRILL: Yes, they will have all the facilities, equipment and space necessary for independent study, research and group conferences.

Q. Is it safe to allow a student to work by himself in chemistry?

"The critical factor is ample space for independent study."

MORRILL

MORRILL: We don't propose that students be totally by themselves. We expect eventually to have aides to supervise the central work areas. These aides, as we see them, will be housewives and other interested citizens who have experience in the subjects involved. They will be responsible for supervision of pupils, assigning work spaces, maintaining adequate amounts of equipment and materials, and helping pupils get whatever they need.

Q. How many students can use a combination lecture and lab successfully?

LEGGETT: We've said 24 is the maximum we want in the lab at any time. If the lab is being used five periods a day, that would give us a capacity of 120 students. If we needed room for 130 students we would have to move into another lab. You have to work each situation individually. After all, you can lengthen the day, you can bring in lab assistants who will do the housekeeping, which will make it possible for the lab to be used an extra period a day. These are all possibilities. The main factor, from our point of view, is that you don't want more than 24 students working in a lab at any one time.

Q *How do you estimate how much space you need in a laboratory? What are your minimums?*

LEGGETT: I think this depends on what you expect to do. How good a school is it? You can get a chemistry lab down to 800 square feet, I guess, and run it. And you can do a poor job in that kind of situation. Ordinarily, I would say 1200 to 1400 square feet is required in a lab-demonstration room. Remember, we're trying to plan labs now that must last for the next 30 or 40 years. We have said that we believe the simple work space with the services will always be important. But it is also important to have enough space to meet any needs. This is tricky because labs are costly and the temptation is to build only what you seem to need immediately. But if you do that, you have then put a limit on what you can do.

Q. Are any special facilities needed for gifted students or retarded ones?

MORRILL: There is no difference in the facilities. There is a difference in the kind of equipment to be used and the methods of teaching.

Q. Then what you are saying is a classroom is a classroom. Yet you have done some special things in your labs. For example, you are using the periphery of the room rather than the center.

MORRILL: This is simply to make a greater portion of the area of that room available for many different uses. If you have lab benches sticking out into the room or set across the room, you cannot use the space flexibly. These benches are screwed to the floor and you aren't going to move them aside. That's the way too many labs are set up today. So when the kids want to do some work with a long steel tape, they have to go out to the corridor or somewhere else to do it. With our new labs, you only have to set aside your tablet armchairs.

LEGGETT: The real key is the size of the room, which also determines the amount of wall space available. I suspect that increasingly we'll see interior labs that are air conditioned, where a high percent of the wall space is usable. The more wall space you have, the less you have to intrude into the middle of the room.

Q. Can a group of students work together on the same project in this setup?

MORRILL: Easily. Two or three can work together using the peripheral benches. Larger groups can use the demonstration table in the front of the room, or the service table in the rear.

Q *Is there any way a school district can compute or estimate how much a good science lab is going to cost?*

LEGGETT: How much does a good school cost? I can think of two

high schools our firm has worked on, not too far apart. They were the same size. One had twice as many science labs as the other. You could justify both in terms of what the schools were offering. There is no formula that says what must be spent on science labs. Single chemistry labs, for example, can range anywhere from $10,000 to $20,000 for equipment.

MORRILL: They cost a lot more than a regular classroom. The difference in cost between minimum and desirable lab facilities is very small. A generous area will provide for flexibility which may eventually save costly renovations and additions.

Q. Can't a school teach science adequately without a lot of fancy tables, work spaces and expensive equipment?

LEGGETT: We've gone through generations of teaching science by textbooks alone. We haven't done a very good job. In today's world, failure to provide kids with the opportunity to really get their hands into science, is a desecration of teaching. We're trying to get students to understand the basic principles. Until they do, they're not going to be real scientists.

MORRILL: On the other hand, just having facilities will not guarantee a good program. You've got to have the proper staff with the proper know-how. When you come right down to it, of course, the staff is the real key. But, we've all heard these people who talked about the Edisons and the Franklins who worked without anything at all. However, most students do not possess the drive and self-motivation which is usually present in the gifted. Our job is to *develop* that drive and motivation so we can open doors for the Edisons and Franklins of the future. One way to accomplish this is to provide students with the kind of equipment and facilities they really need and know how to use. **End**

How to buy

Purchasing equipment for a new science lab—or for a refurbished one—should be a major undertaking for your district. Here's how Allentown, Pa., chooses apparatus guaranteed to equip its students for work in the 20th century.

■ ■ ■ If you're creating science laboratories for a new high school—or new laboratories for an existing high school—you'll find a wealth of designs, equipment and materials to choose from. Somehow this wonderful world of the possible has to be whittled down, shaped and polished into a science setup that's right for *your* school.

Careful planning is just half the story. Your students can't meet in beautiful blueprints; they need buildings. They can't carry out experiments with catalogs; they need equipment. Translating plans and models into usable laboratories is a long and difficult process. Mistakes can cost far more than money: they can hamper your science program and cost your students a chance to participate in the 20th century.

What steps should you take in choosing and purchasing science equipment, including everything from floor surfaces and benches to test tubes and measuring spoons? What sort of preplanning is necessary, and by whom? Who should be involved in drawing up specifications? What are the ground rules for evaluating suppliers, for inviting and screening bids? And where does the major responsibility lie?

For authoritative answers to these questions, SCHOOL MANAGEMENT editors turned to John S. Cartwright, superintendent of schools in Allentown, Pa., and a member of the executive committee of the American Association of School Administrators. In his eleven years at Allentown, Cartwright has helped to plan and outfit several schools, all fully equipped to teach science.

Q In selecting your science equipment couldn't you simply turn to the general contractor and say, "Here is the amount we want to spend, buy us the equipment and put it in"?

A. We could, but the result would likely be unsatisfactory. In most cases, there would be little educational planning, no consideration of what is best for the students. Even if your contractor were conscientious, with a heart of gold, even if he were in business just for the fun of it, he couldn't give you the labs your students deserve. To turn the job of selecting equipment over to him would be to abdicate your role as educator.

Q. At what point can you turn to the architect or contractor and say, "You know approximately the

laboratory equipment

kind of equipment we want and how much we can spend. Get us the best you can"?

A. You rarely can. Most of these men are specialists in their own areas, but not in education. And every community is different. The equipment you choose has to be right for the teachers, the students, the educational program of that particular school. The superintendent—with his staff—draws up the educational specifications, and it's his job to see them through.

Q. As a matter of fact though, in many schools, the general contractor does decide what equipment should be purchased. Are you describing an ideal situation?

A. Not at all; I'm talking about the *proper* situation. I know that in many communities, the superintendent is understaffed. He has to be the lawyer, the purchasing agent, everything. He doesn't have the time to supervise bidding or to keep up with new developments in science equipment, so he awards this job to the general contractor. But the school pays a price—in educational value and sometimes in quality.

Q. You wouldn't accept that situation in Allentown?

A. No, sir, we would not.

Q Where do you begin in planning science facilities for a new high school? How do you determine the number of laboratories you'll need for each subject?

A. First of all, we know the present trend in course enrollments, and we project this into the future. Here in Pennsylvania, the state department mandates a science of some sort for every student; this usually means biology or chemistry. For students going to college, there's a mandate of a science in addition to biology, which puts them in chemistry or physics automatically. So we can project our minimum enrollments with some accuracy.

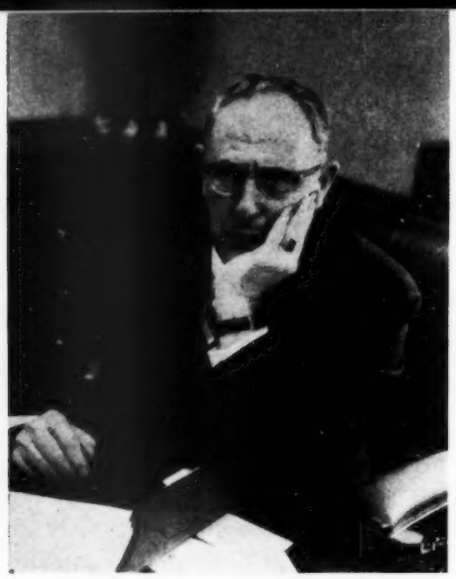
Next, we know the changes that will definitely occur in our instructional program. For instance, when we built our last high school, we knew we were moving biology to the ninth grade for college-bound students, which meant that some high school students would be taking earth science, or advanced physics or chemistry. And, of course, the non-college-bound students would be taking biology.

Finally, we try to anticipate changes that are likely to develop in the future. For example, there's a good deal of talk now about the multi-purpose laboratory for courses that cut across traditional subject lines. This is a possibility, but probably not in the immediate future. The teacher is the key to the laboratory; and for a multi-purpose lab, you need a multi-purpose instructor, or a team of instructors who work together harmoniously in the use of the lab. At the moment, they're not in strong supply.

Q How far ahead can you plan? Is it possible to equip a laboratory that will never become outdated?

A. There's no such thing. We can't begin to foresee the changes that

Wave behavior—*courtesy Educational Services, Inc.*



"Buy equipment yourself. Others rarely know what your students and teachers really need."

CARTWRIGHT

the next 10 years will bring in the field of science. Indeed, I should hesitate to predict a year ahead in some areas of science today. The best you can do is to make your labs as flexible as possible. It's possible to go a long way in that direction, but there's no guarantee that the lab, no matter how flexible, will be right for the future.

Q. How long do you allow to pick the equipment for each laboratory? How far in advance of purchasing do you begin?

A. Our specific planning begins as much as two years before a new high school is designed. But every year we've been attending conventions, studying catalogs and generally keeping in touch with new developments. This whole field is moving so rapidly that we have to move like the devil to stay up-to-date. Also, we're learning from the mistakes made in our own high schools and in others built more recently in this area. If we're remodeling an existing school, it very often takes a budget year, and sometimes longer. If we're building a new school, it may take a year-and-a-half to two years. During this time we set up teacher-administrator committees and travel committees to corral ideas; then we assemble the ideas, along with our own, and produce a total educational specification, which goes to our board of school directors. There it is approved or modified and then it's given to the architect the board has chosen. He uses it as the basis for his design. These educational specifications are the *sine qua non* of planning.

Q. You consult your teachers right from the start?

A. Yes. Their judgment is vital to us. Of course, if we were just buying a single item of equipment—say, a microscope—we wouldn't set up committees. I'd turn to the head of my science department, who's been in the field 30 years, and if he has any specialists on his crew, he'd lean on them. We've found this out: if we buy equipment and impose it on the teachers, it sits in a cupboard somewhere in the lab and no one gets to use it. Right now we're previewing some equipment, and I tell the representatives, "First of all, let's find out whether the teachers are going to use this—and if so, *how* they're going to use it. Then we'll be ready to talk."

Q. You mentioned travel committees. What are they? How do they operate?

A. They're formed *ad hoc* for special purposes, but always with the same chairman, a man on our staff who got his doctorate with a major in the study of school buildings. Each time, as we look into a certain kind of facilities for one of our schools, he takes the principal of that school and a couple of specialists—there are usually three or four people on a committee—and they travel to observe how other schools are meeting the problem. On a science committee, the specialists might be an electronics man and one of the science teachers.

Q. How far do they travel?

A. Before we built our last high school the team started at Pittsfield, Mass., visited schools in New York, New Jersey and Maryland, and a two-member team visited Evanston, Illinois.

Q. What are they looking for? Isn't a chemistry lab a chemistry lab? Aren't they all pretty much alike?

A. No, they're not. One functions, and another one is dead. In one laboratory, the equipment is arranged so that the instructor can see all his students and control them all. In another, the hoods will be placed wrong, so that he can't see all the students; he can't be sure what's going on in his room. In one, provision is made for independent study, in another it is not. Our team looked for both situations—those we might adapt for our own use, and those we should be careful to avoid. At the same time, they looked for specific equipment: new types of hoods, radioisotope labs, electronic boards, closed-circuit television—

Q. For new equipment and new concepts?

A. I'd say they were looking first for concepts, because equipment follows the concept; but very often we found the concept and equipment together. The concept had actually been translated into something concrete, and we could learn a great deal from that.

Q Was there anyone on your science team who wasn't a science specialist — an English teacher, for example?

A. No, but we're going to try this in the future. Two years ago I was

acting as chairman of a committee on guidance; all the members were guidance people except for myself and one other person, a kindergarten teacher. Do you know who had by far the freshest, newest point of view? The kindergarten teacher. We learned more from her about guidance than we did from the guidance people. In the same way, I think we can sharpen our travel teams by giving them a cross section of teachers.

Q. When your travel committees finished their work, did they go ahead and plan the labs and say, "This is the way we want them built"?

A. No. I couldn't imagine having committees function that way. First we talked over their impressions, and they presented some of their ideas at a cabinet meeting. There we saw that some of the proposals didn't meet our needs or didn't fulfill our over-all purpose. Then a committee prepared a recommended draft of an educational specification—a rather detailed list of the things they thought we should have. We studied this carefully and drew on it for our final specifications.

Q. Would this include general recommendations, such as the number of learning stations, or would it identify the exact equipment that might be needed?

A. Both. It might say, "We want a microscope for every child." Or it might say, "This brand is the best equipment of its kind that we saw."

Q. How specific can you get? Can you say, "These are the brands we want"?

A. No. We might mention a brand if it's the only one we know that has certain qualities we need, but under Pennsylvania law we have to add, "or equal." We ourselves decide what's "equal." In other words, we draw the specifications fairly tight around what we consider to be standard materials, and anyone who bids has to meet them. If we say we want impregnated stone or some other specially treated material for a bench top, then that's what we want. If a bid varies from this, we can eliminate it.

Q Even without mentioning brand names, can you write your specifications in such a way as to close the bidding to all but a few companies you know and respect?

A. I suppose we could. We have three criteria: materials, construction and finishing. Under the heading of construction, for example, we might specify that only a certain brand would fit into the laboratory the way we want it. But this wouldn't just be nasty; it would be stupid. If we do this regularly, we won't get competition in our bids, and that means our prices will rise. By standardizing that way, we are only penalizing ourselves.

Q. During all this time, while you're doing the initial planning and writing your specifications, are you talking with manufacturers and suppliers?

A. Absolutely. I need contact with someone outside my own organization, so that I can challenge my staff. And the representatives have a lot to share with us. They get around, and they know what the competitive equipment is.

Q. Do you ever ask them to plan your laboratories or to suggest layouts?

A. I think we did this once. Our science department head worked together with them on it.

Q. Would they help you plan your courses, as well as your equipment?

A. No. These companies have fine men on their staffs who know science and who know teaching, but they don't know our community and our particular needs. We look at their material, and we find ideas in it that we can use. But we don't permit them to determine our courses or our methods of teaching them.

Improvised equipment—*courtesy Laboratory Guide, D. C. Heath Co., Boston Mass.*

Q Can you call on a manufacturer for advice without putting yourself in a position where you have to accept his bid?

A. He knows we couldn't do that —and wouldn't if we could. We refuse to be compromised on that score. When he offers his service, he's offering it *as* a service, with no obligation. We couldn't guarantee him preference because that would drive out the other bidders and tie us to any price he wanted to charge. No, if we get two bids that are equal in quality, and one is much lower than the other, we'll take the lower bid, whether it's his or not.

Q. Once you've drawn up the final

specifications, you're ready to go after bids?

A. Not immediately. Our specs go to the board of school directors, which reviews them and may offer some modifications. Then, after the specs have been approved, the board turns them over to our business manager, who acts as our purchasing agent. He advertises for bids.

Q. The specifications are also given to the architect?

A. Yes. They provide him with a fairly detailed framework on which to base his design. In our last high school, for example, we wanted a minimum of 825 square feet for each classroom and 1,200 to 1,500 square feet for a lab. This was written into the educational specifications, and it became part of the architect's instructions.

Q. You say you advertise for bids. Do you invite individual manufacturers and suppliers to bid?

A. We notify those we especially want to hear from. But the bidding is open to everyone, and in effect we notify the whole industry through our ads in the newspapers.

Q. The companies you invite to bid—those are companies you've had experience with and feel are quality suppliers?

A. Right. There's an integrity built into them, and their equipment has held up well through the years. Also, they follow through by giving us the kind of service we need. And they keep us aware of changes that are taking place in the field. We get their catalogs and fliers when we need them in the planning stages, which is a real service in many specialized fields.

Q *Would you accept bids from suppliers of foreign equipment, such as Japanese microscopes?*

A. If they met the "or equal" standard, we'd certainly consider them. But we'd have to be realistic: along with quality and cost, we'd have to keep certain sectors of public opinion in mind. Let me put it this way: if we got identical bids on a piece of equipment from a local dealer and one in another city, the local man would probably get the award. In the same way, we'd tend to choose American equipment ahead of foreign-made.

Q. How much time do you give bidders to examine the specifications?

A. This would vary, of course, but generally the bidding is open for several months and advertised for at least three weeks.

Q. Suppose a supplier comes in with an unusually low bid for equipment that he claims is equal but you feel is inferior. Can you avoid giving him the contract?

A. We draw the specifications fairly tight, so it's not a matter of subjective judgment. The difference in quality is often quite clear. Quality and price may not be a 1:1 ratio, but they generally follow each other. And we don't guarantee to award to the lowest bidder unless he meets our specifications.

Q. Suppose the equipment does look equal?

A. It might on the surface, but it's hard to imagine that it will really stand up on examination. For example, some local planing mill that doesn't handle science equipment might bid to construct the wall cupboards or sink enclosures. But they don't realize that for a laboratory these items require very specialized treatment, particularly for quality desk tops and drawer space for equipment; and mountings for utility services. On top of that, you have to consider service. The equipment has to be installed correctly, and it has to be serviced properly as it's broken in, or the whole value can be lost. Here we take the manufacturer's reputation and experience into account.

Q. What if a bidder comes to you and says, "I'd like to bid on this, but I don't want to take the time to prepare a bid unless I have some assurance that my equipment will be considered equal"? Would you evaluate it for him?

A. No recognized manufacturer would ever do that. It's hijacking.

Q. Would a manufacturer ever study your specifications and then offer you something better, something you may not have known was on the market?

A. That happens; and if he really does have something better in the same price range, we'll buy it. But he has to prove his case.

Q. Do you ask for samples of the equipment to accompany the bids?

A. If a piece of equipment is small, and if there's controversy about it, we might ask the manufacturer to submit a sample that we could discuss at a board meeting. His representative wouldn't be present then; it would be a closed meeting.

Q. You check each bid for price and quality. Do you also evaluate the company itself?

A. Yes. The board of school directors can exercise discretion. For example, we've had suppliers who delivered poor quality material or gave poor service on one job and then were the lowest bidders on another. When this happened, our board advised us to pass them by and award to the second lowest bidder, and our solicitor held this to be proper. Fortunately, this doesn't happen very often.

Q *What qualities do you look for when you're judging a manufacturer?*

A. First, his integrity. We have to avoid the trap in which equipment is being delivered that's not up to specifications, but school is opening in three weeks and we don't have time to shop for replacements. Second, the quality of his merchandise. Is it consistently good, and is the quality maintained in details? Third, his service. Will he install the equipment correctly? Will he take the initiative in follow-up service? Will he respond quickly if we need repairs? And finally, the kind of representatives he sends out, the persons through whom he works locally. All these are important.

Q. You'd apply these standards in buying every piece of equipment?

A. Every piece but one. That's the most important, and we don't get it from a manufacturer. Let's not forget the teacher who's going to run the laboratory. The best piece of equipment we can get is what is in his head. **End**

Could your district use semi-micro equipment?

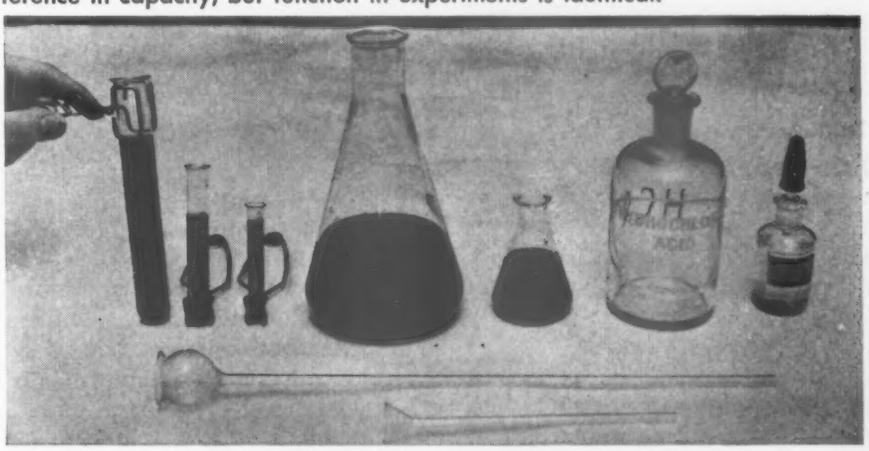
Half-size equipment, introduced a few years ago, can make it possible for all your students to carry out individual chemistry experiments. Here's a report on the advantages and disadvantages of semi-micro equipment from a district that has used it for four years.

■ ■ ■ Standard procedure in high school chemistry laboratories is to have the students carry out joint experiments, in groups of three or four, with full-scale equipment. In effect, one student handles the equipment and reagents for a given experiment, while the other students observe. But the results are uneven. In chemistry, a student must learn by doing; observation is not an adequate substitute—and certainly not as much fun. The resistance to chemistry on the part of many bright students can be traced in large measure to this laboratory routine.

Nearly four years ago, SCHOOL MANAGEMENT reported an imaginative new application of science equipment that promised to revolutionize the teaching of high school chemistry. This was the use of semi-micro (half-size or less) laboratory equipment. Two teachers at North High School in Worcester, Mass., had introduced semi-micro equipment in their classes with highly encouraging results (*See "More lab work at lower cost," SM, Jan. '58*). There was every reason to expect that the idea would attract widespread attention.

With semi-micro equipment every student has what amounts to his own laboratory in the classroom, and he performs every experiment himself. His participation in the learning process is constant and immediate. For this reason, if for no other, the semi-micro technique should have

Comparison of standard and semi-micro laboratory equipment shows difference in capacity, but function in experiments is identical.



caught the eye of many science teachers. Yet, in the last four years, it has had surprisingly little impact. Those who use it still consider themselves pioneers.

Why?

For a candid report on the pros and cons of the semi-micro technique, SCHOOL MANAGEMENT interviewed one of these pioneers. Bentley Bolin has taught chemistry for twenty-four years at the Ferguson-Florissant High School in St. Louis County, Missouri. Four years ago he switched to semi-micro equipment—the first public school teacher in the Midwest, he believes, to do so—and saw the advantages and the problems firsthand. Here's what he found:

Bolin: "Students learn more with semi-micro."

The advantages

Individual effort. "With the conventional macro (standard-size) equipment, we'd have as many as four students doing one laboratory experiment. My experience was that one would be doing the work; one would be watching rather closely; one would be helping a little bit; and the fourth would probably be getting into trouble.

"In a semi-micro class, we never have more than two students working together, and they could work individually if they preferred. Those who work in pairs are mostly girls who are taking chemistry in preparation for careers in nursing. They're a little hesitant to handle chemicals, and for some experiments I let them work together. In some other classes, every student does every experiment alone.

"These are exactly the same experiments we used to teach with the macro equipment. There's no difference except in scale. And one really big advantage of the semi-micro technique is that the more interested students can go ahead on their own, try new combinations and new experiments—under supervision, of course."

More effective learning. "Since the chemical reactions are taking place on a smaller scale, the students have to observe more carefully. This means that they develop more precise laboratory techniques, pay closer attention and see *even better* than they would with macro equipment. As a result, they learn more.

"In the last few years, we've had a sharp increase in the number of students who went on to do outstanding work in college chemistry. There may be several reasons, of course, but it's interesting that this change occurred since we adopted the semi-micro technique."

Continuous instruction. "In a laboratory using macro equipment, it's impossible to keep all the necessary chemical reagents within reach of each learning station. They're kept in a stockroom or on a special reagent table, and there's a good deal of traffic between this location and the individual stations. The instructor wastes much of his time acting as a bus boy, delivering equipment and reagents; and the students are frequently on the move. This means that the instruction is continually interrupted.

"The pivot of a semi-micro laboratory is the reagent tray at *each learning station.* Our trays are just over a foot square, about 12 by 14 inches. Each one holds 108 chemical reagents in small bottles—15 milliliters, or 30 milliliters at the most. With these reagents and the semi-micro equipment, each student has within reach all the tools he needs. He can work steadily, without leaving his station during the lab period. And the instructor can spend all his time observing the students and helping them with their experiments."

Keener interest. "We've found a much higher percentage of students interested in chemistry since we adopted the semi-micro technique. The main reason, obviously, is that they're actively challenged in the laboratory work now, where before they spent most of their time shuffling their feet and watching. A second reason is that they aren't so frightened by the smaller amounts of chemical reagents; though if this makes them less cautious, it's not really an advantage."

More experiments. "With the smaller equipment, and using smaller amounts of materials and reagents, it's possible to complete

experiments more quickly. If your lab periods are short, you have a better chance of completing an experiment during one period, rather than carrying it over to a second. In any case, you should be able to perform more experiments during the course of the year."

Lower cost. "Semi-micro equipment is considerably less expensive than macro equipment, and of course we spend very much less for materials. Under the old system, it's true, we had up to four people working on one experiment, but the reagents for that one experiment generally cost us more than the reagents for *eight* similar experiments on semi-micro equipment."

Greater safety. "The danger from combustible gases is significantly less than with macro equipment." (*For the one exception, see "A new hazard," below.*)

New courses. "The semi-micro technique opens up new possibilities for advanced study. For example, for the last three years I've taught a course in qualitative analysis. This was possible because more students could participate with less danger using the smaller equipment. A number of other courses would also be feasible that couldn't be taught as effectively with the macro technique."

The problems (and some solutions)

Initial cost. "One reason that administrators might be reluctant to switch from macro to semi-micro is the initial cost of conversion. Some of the special equipment we need is rather expensive. Centrifuges for precipitation reactions cost a little over $60 each. We need scales that are accurate to at least one hundredth of a milligram; they come high, and we need from six to 12 for each laboratory.

"But there's a bright side to this too. If you're building a *new* laboratory, your initial cost is lower than it would be for macro equipment. If you're converting, the operation can be phased over a three-year period, and the cost can be spread over three annual budgets.

"And the macro equipment on hand isn't wasted. I kept some of ours for classroom demonstrations, and quite a bit of it went to science teachers in the elementary and junior high schools. They use it for demonstrations, where they may have taught only theory before. So our conversion in the high school enriched our science teaching throughout the system."

More preparation. "A major problem is the need to keep the reagent trays filled—in our laboratory, 24 trays with 108 bottles each. When we had a macro laboratory, the reagents were distributed during class, and we paid the price in less keen interest and less effective learning. Now I have to fill the trays outside of school hours, but it's worth it.

"Four years ago, I used to spend up to an hour every afternoon just on this chore. Today there are more supply houses, and it's easier to get the correct size bottles, labels and so on. A teacher should be able to keep the trays filled in a couple of hours a week—perhaps less if he lets his better students help out. Several of mine have come back to help me after they graduated, and some of those who take chemistry their junior year give me a hand when they're seniors."

A new hazard. "We've come up against one safety hazard with semi-micro equipment that wasn't quite as serious in a macro laboratory. The students work closer to the smaller test tubes; and because they feel more comfortable with the smaller amounts of reagents, they aren't always as cautious as they should be—the beginning students especially. When they're heating liquids in the test tubes, the acids and bases sometimes erupt, and this brings a danger of damage to the hands, face and, particularly, the eyes.

"To guard against that, we've adopted a rule that is enforced in all industrial laboratories: **'If** you're working with chemicals that you think aren't dangerous, wear glasses. If you know they *are* dangerous, wear goggles.'

"We don't have occasion to require goggles, but we do require all students to wear glasses during their laboratory work. For those who don't own prescription glasses, we supply very high quality, optically ground, industrial glasses —the same type that are used in the laboratories of Monsanto Chemical Co. here in St. Louis. There's no problem of eye strain at all.

"My own feeling is that glasses should be worn in any chemical laboratory, whether it's macro or semi-micro. With the semi-micro technique they're somewhat more necessary, that's all."

Inertia. "I think most people who've ever studied a little science realize that the metric system would be more useful in everyday life than the present English system of weights and measures. But we won't change our ways in the immediate future because of the tremendous adjustment it would require in our thinking. That same obstacle exists, on a miniature scale, in the change from macro to the semi-micro technique. Let's call it inertia.

"The only solutions I know for it are persistence and time." **End**

Semi-micro reagent trays are conveniently located within reach.

What are the new

Better ways of teaching all the sciences are now being developed. The first complete curriculum is in physics. Here's what the new course looks like, why it's becoming so popular, and how you can get started in it.

■ ■ ■ The current high interest in the teaching of science has resulted in a whole series of new courses designed to improve their appeal to students and their ease of presentation.

Special committees have been at work revising physics, biology, chemistry and math courses that have been taught basically the same way —sluggishly—for the last several decades.

What are "the new curriculums"? All of the committees concerned with revising science teaching have concentrated on presenting basic concepts. The committees found that over the years most science teaching had gotten away from basic considerations.

The most recent urge has been to give currency to science courses by including as much as possible about the technological advances and new applications of science. The result has been that technology has become

Films in the new curriculums are not reviews or primers. They bring to the class top physicists and instructors conducting experiments too awkward and

curriculums?

top-heavy and the basic concepts have been lost. The further result: no matter how a course was revised to keep up with technology, it was always out of date.

The new courses all assume that basic concepts must be thoroughly understood by the student. Then, on his own during the school years and as an adult, he can use this primary knowledge to keep up with the new as it is discovered.

One of the most advanced of the new curriculums is physics. Produced by the Physical Science Study Committee, here's a course which is being used in whole or in part in better than 2,000 high schools this year.

One of the features of the new physics curriculum is its flexibility. A school can adopt the course *in toto*—using everything from a textbook to films and supplementary paperbound books—or it can take any piece of the curriculum that appeals to its pocketbook.

It becomes readily apparent that much of the usual subject matter is left out of the new physics course. The material dealing with technology is omitted. So are some materials of considerable significance and interest, such as the physics of sound. What remains has been carefully evaluated.

To be included, the subject matter had to meet four criteria:

1. Teach major achievements of physics, such as the great conservation principles.

2. Give insight into the way in which these powerful ideas were conceived, nurtured and sometimes overthrown by even more powerful ideas.

3. Present a unified story in which the interconnections within physics were brought to light.

4. Show physics as a human activity comparable in significance to the other major studies of high school students.

To follow these criteria the order of subject presentation differs widely from the traditional course. The sequence is based not on chronology of discovery but on the student's familiarity with the phenomena.

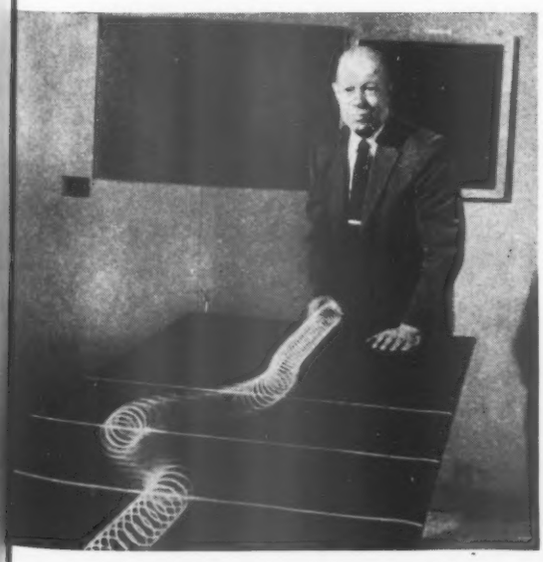
Optics first

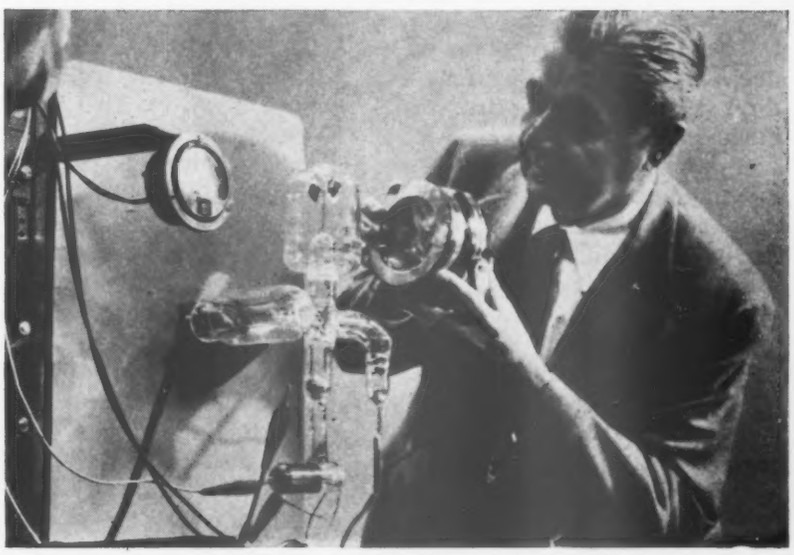
The best example of this is the early introduction of optics.

Optics, says the PSSC, provides a better point of entry for a serious study of physics than the usual Newtonian mechanics. Newtonian mechanics is highly abstract and quite apart from ordinary experience. At the elementary level, it is not suitable to show the interplay among experiment, law, and model that characterizes physics. It too often is hopelessly dull.

In optics, however, the teacher takes advantage of phenomena with which the student is familiar. Many interesting experiments can be performed. The teacher can use these to build a momentum of in-

too expensive for schools. Here are views from three films (left to right): "Millikan Experiment," Dr. Albert Redfield, IBM; "Simple Waves," John Shive, Bell Laboratories; "Pressure of Light," Dr. Jerrold Zacharias, MIT.





terest that will carry the student into mechanics, for which he is then better prepared.

Four major parts

The new course is in four major sections, all closely interrelated.

The first is a general introduction to the fundamental physical notions of time, space and matter. From experiments in measuring time and matter, the student moves to an understanding of velocity and acceleration, of vectors and of relative motion. He then goes on to study matter, developing the concepts of mass and of its conservation. Laboratory work and films then show that matter is made of relatively few kinds of atoms. In this first part, the student gets the idea that in physics, time, space and matter are united.

The second part begins with light, leading to the particle theory and then to waves. Discussion in this part emphasizes the manner in which virtually all scientific knowledge develops.

Part three takes a closer look at motion, this time from a dynamic point of view. With simple laboratory apparatus, the student discovers Newton's law of motion. (Incidentally, this course refers throughout to Newton's law and has eliminated the conventional attempt to require the memorization of Newton's three laws of motion.) The laws of gravity, conservation of momentum and conservation of energy are introduced through a combination of theory and laboratory exploration.

The last part of the course introduces the student to electricity and through it to the physics of the atom. Here he uses the knowledge of dynamics gained in part three. Next comes a discussion of magnetic fields produced by magnets and currents and the forces they exert on moving charges. The final section discusses the induction laws, leading to the structure of the atom. The circle is thus closed and the student returns to the basic concepts of science with a new understanding.

All through the course, compartmentalization is resisted. The subject of light, for instance, is not disposed of in one great gulp, but reappears in progressively greater depth as the student's general understanding of physics deepens.

The course also seeks to stress the interconnections among physics and the other sciences, particularly chemistry and biology.

Physics, then, is presented in this new course as an intellectual activity rather than as a body of rules for the control or manipulation of natural phenomena.

The course stresses the pursuit of knowledge and the satisfaction to be derived from the acquisition of knowledge, independent of the material gains that may be associated with it.

How about the student who is interested in going down sideroads of technology? Are there aspects of physics to be ignored entirely? The answer is "no." To accommodate these students, Doubleday & Co. has begun publishing annually a series of 12 to 15 paperback volumes, each selling for under a dollar and each offering the bright, interested student a chance to delve further into the technology of physics. One book discusses the physics of television, another is a study of the nature of violent storms, another makes up for the deletion of the physics of sound in the basic textbook.

Students like it

Field tests tend to prove that the new course, hard as it is, is yet appealing to the average youngster. For one thing, it is designed so that advanced mathematics is not absolutely essential, although no one will deny that being at ease with abstract numbers helps. Enough about logarithms is included to make up for this deficiency, say the course's proponents.

Lots of interesting laboratory work is another teaser for the student who ordinarily would not take physics. Much of the apparatus is purposely made from commonplace things such as soda straws and storage batteries.

Experiments have been changed, too. They're a far cry from the old method where the student simply performed the dictated steps, and reached a foregone conclusion. In the new curriculum, the chief purpose of the laboratory work is to get the student to think. Finding the precise answer is subordinate to understanding.

Using films

The films correlated to the course are different from the usual educational films. They presume there is a teacher and a textbook. They also presume the students have been doing laboratory work.

But since there are experiments which require equipment too small, too large or too difficult for the average high school student, the films will supplement lab work. They feature top scientists who not only perform the experiments, but give students a real-life picture of science in action.

The films can be bought or rented separately. To help get around the cost factor, the films have been correlated with various standard textbooks now in use.

The resistance

Why aren't all schools adopting the new courses? Money is one reason. It's expensive to purchase the tools and to train the teachers the new course demands. Another reason might best be called "resistance to change." Many schools have felt no great demand for change. Some schools, of course, don't offer physics; in many cases because they don't have a physics teacher. And educators, like people everywhere, have a tendency to leave well enough alone.

But what is left alone is no longer going to be well enough—if it ever was. And, with money being provided by various foundations as well as the federal government, it seems obvious that major revisions in science teaching are going to be made.

Some of the more advanced and wealthy school systems are already well into the new material. The great majority are just beginning to move forward this year. Hopefully, it won't be long before every district has at least gotten its feet wet in the new curriculums. **End**

How to get scientific help from industry

Top science students in Glen Rock, N. J., are seeing their classroom theories come to life in industrial research laboratories and production lines. Here's how this district cooperates with eight firms in an exciting summer program.

■ ■ ■ Industry's role in science education is growing.

Item: A North Carolina high school regularly sends groups of students into tobacco fields with professional researchers to analyze the chemical content of soil.

Item: In a New York district, workers of a major research institution are helping biology students with their experiments on cancer tumors in mice.

Item: In Tulsa, Okla., local researchers are invited into the classrooms to share their knowledge with interested students.

Item: In a Dallas, Tex., suburb, petroleum engineers have conducted experiments and demonstrations on educational television programs.

Not surprisingly, many industrial firms have *volunteered* their services, personnel and facilities to schools located within their areas of employment. From a company's point of view, this is simply good community relations.

From a school's point of view, industry can be a tremendous help. Facilities the district cannot afford become available to talented students and enthusiastic teachers. Students doing extracurricular work get advice and technical help from top scientists in their fields of interest. Perhaps most important of all, principles and theories learned in class come to life for youngsters when they observe practical applications.

"All I have to do is explain our program. Most firms are as anxious as we are to get started. Some volunteer."

EUGENE J. BRADFORD
Superintendent, Glen Rock, N. J.

One district with an organized program that takes advantage of help available from local industry is Glen Rock, N.J. Here, academically gifted students in biology, chemistry and physics, volunteer for extracurricular college lectures during the regular school year, then attend short seminars and institutes held at nearby research plants during the summer. The youngsters actually go into the labs and, though they don't conduct experiments, they do get firsthand exposure to science at work.

This summer, for example, Glen Rock biology and chemistry students spent time at Hoffmann-LaRoche, Inc., a nearby manufacturer of pharmaceuticals and chemicals. Three of the company's top researchers taught students how to care for and breed laboratory animals, and demonstrated

In industrial research lab, Glen Rock pupils observe care and testing of animals. Here, they see how researcher samples stomach content of mouse.

how new drugs are developed by testing them on animals.

Seven other organizations also made time and personnel available to the schools in the summer.

Glen Rock Superintendent Eugene J. Bradford says the basic aim of the program is to show students the practical application of knowledge. "We are bringing these students in direct contact with practicing scientists," he says. "Opportunities for such contact are normally quite restricted, and programs like ours do a lot toward eliminating students' misconceptions about research and the people who do it. One physics student told me he discovered, much to his surprise, that scientists are human.

"One big advantage of this program is that it brings industry closer to education. When companies get to know our schools, they go out of their way to help us with their advice, recommendations and resources."

How the program works

The college-industry program is really an extension of superior students' regular classwork, but they get no credit toward graduation. "We already had separate classes for our top science students in grades nine through 12," says Bradford. "At the beginning of the school year, these students volunteered to take on extracurricular experiments and to go to college lectures. These are held about once a month during the school year at Fairleigh Dickinson University, Union State College and Montclair State College—all within easy driving distance of our schools. These talks are meant to fill the gap between the students' classwork and what they will see when they visit the industrial firms next summer. But the subject matter is integrated with the students' regular studies.

"At the beginning of the summer, when school is recessed, we set up dates to visit the cooperating companies. The firms are selected because of their proximity, their willingness to make top people available to us, and their diversity. All I have to do is call or write and explain our program. Most firms are as anxious to do it as we are. Some companies have actually volunteered."

High school science teachers visit the firms before the students do. The teachers go into the labs and help the firm's technicians and scientists arrange a tour and pro-

Precision weighing of chemicals is a practical application of the principles learned in school lab. This is basic aim of volunteer program.

INDUSTRY SERVES EDUCATION

Eight research labs cooperated with Glen Rock High School in conducting seminars for outstanding science students. They are:

Becton, Dickinson & Co., Rutherford, N. J.

U.S. Rubber Co., Wayne, N.J.

New Jersey Experimental Station, Rutgers Univ., New Brunswick, N. J.

Hoffmann-LaRoche, Inc., Nutley, N. J.

Lederle Laboratories, Pearl River, N. Y.

Westinghouse Electric Corp., Bloomfield, N. J.

Isotopes, Inc., Westwood, N. J.

Stevens Institute of Technology, Hoboken, N. J.

gram for the coming visit. This insures that the students will see and learn things that pertain directly to their regular studies.

"We usually arrange a visit for the middle of the week," says Bradford. "On Monday, the students gather at school. Their teachers explain the nature of the firm's business, and what the students can expect to see and learn. This enables them to help themselves, get questions ready and so forth, so they don't walk into a lab unprepared.

"A visit to a company lasts two or three days. First, the students get an indoctrination talk, then they are taken to the labs, production lines, etc. They usually move about in small groups escorted by company personnel who are familiar with different phases of the operation. Sometimes, a group of students will spend an entire day in one room examining a piece of research in minute detail. They are encouraged to ask questions, and company 'guides'—forewarned—always try to explain the practical applications of laboratory studies."

At the end of the week, the students return to school for a review class. Some of them prepare oral or written reports on what they saw. Last summer students visited eight research labs in the vicinity (*see list opposite page*). Each showed a different way in which scientific theory, learned in the classroom, is put to practical use in industry and business.

No objection

"The visits constitute an expense to the firms, because they are placing several persons at our disposal all day for two or three days during working hours. Nevertheless, there has never been an objection from top management or supervisors. We arrive early in the morning and leave about four in the afternoon. Students are usually treated to lunch in the cafeterias.

"I think these firms regard our program not as a personnel-recruiting device, but as industrial recruiting for science in general. They feel they're doing their bit for education." **End**

Where to get help for your district

If you are interested in upgrading your district's science program, you needn't go out on your own. Help is available from a variety of sources. Here is a description of programs sponsored by the National Science Foundation of direct benefit to schools.

■ ■ ■ Since World War II, and especially since Sputnik, a revamping of America's science education has been a prime concern of some of our most brilliant and imaginative minds. Everyone has pitched in: federal and state agencies, private foundations, professional societies, many large public school systems and industry.

Do you want ideas for—and assistance with—curriculum structure? course content? teacher training? buildings and equipment? instructional methods and classroom aids? Help in all these areas is available now and in abundance. Literally dozens of groups invite your requests for information—so many, in fact, that your first problem might be where to turn first. The answer is easy: to your state department of education and the U. S. Office of Education in Washington, D.C. They'll help you chart a path through the maze.

To sample the range of activity in this field, let's consider the projects supported by just one organization, the National Science Foundation in Washington, D.C. NSF is an independent agency of the federal government, created in 1950 to encourage basic research, training and education in the sciences, and the interchange and dissemination of scientific information. Many of its programs are carried on at the college, graduate and professional levels.

The following condensed summary includes only those NSF projects that directly affect elementary and secondary schools—*your* schools. Here they are:

Elementary schools

Study opportunities. For teachers and supervisors who wish to extend their own science education, NSF supports summer and in-service institutes at selected colleges and universities. These in-

stitutes, which charge no tuition or fees, offer instruction in the *subject matter* of science and mathematics; they do not touch on methods of teaching science in the elementary school. Participants in the summer institutes may receive stipends and allowances. Participants in the in-service institutes may receive allowances for books and limited travel. For more information, write to the Institute Section of NSF. (*See the directory on page 98 for addresses of all organizations and persons mentioned in this article.*)

Course development. Under an NSF grant, scientists at the University of California in Berkeley are devising sample units in general science for grades one through six. Members of the departments of physics, chemistry, astronomy, geology, bio-chemistry, psychology and the history and philosophy of science are working together with the university's school of education and schools in nearby districts. (For information, write to the Elementary School Science Project.)

A source book on earth sciences —comprising sample units, laboratory and field studies, and other teaching aids—is being developed at the University of Minnesota. This project is sponsored by the American Geological Institute under a grant from NSF. (For information, write to Dr. Robert L. Heller.)

A number of exploratory studies in course development are also being made, some by groups with a specific interest in the elementary schools, some by groups which have developed materials for secondary schools and are now seeking a fresh challenge. (For information, write to the Course Content Improvement Section of NSF.)

Classroom aids. Libraries of carefully selected books on science and mathematics are available on loan under an NSF grant. (For information, write to the American Association for the Advancement of Science.)

New grants for classroom aid projects include one for the development and testing of inexpensive materials, such as an abacus and blocks, for use in teaching arithmetic. (For information, write to Dr. J. N. Payne.)

Secondary schools

Study opportunities. Advanced science training is provided for both teachers and students under NSF grants. For teachers alone, there are six distinct programs:

Teachers of science and mathematics who are qualified for individual study at a graduate level are considered for *summer fellowships,* which pay a stipend in addition to tuition, fees and certain allowances. Tenures range from one summer session to three full summers; and the studies may be in any of several disciplines or interdisciplinary fields. Five hundred secondary-school teachers received fellowships in 1960. (For information, write to the American Association for the Advancement of Science.)

Approximately 18,000 teachers attended NSF *summer institutes* this year. They ran for an average of seven weeks. Participants are eligible for stipends plus allowances, and many earn graduate credit for their work. An announcement of the summer institutes for 1962 is scheduled for early January. (For information, write to the Institutes Section of NSF.)

For teachers who wish to pursue a full year of graduate study in a college or university, NSF supports a program of *academic-year institutes.* During 1960-61, more than 1,500 teachers were participating; a number of these were able to earn their master's degrees. Each participant receives a stipend plus allowances, as well as free tuition. In many cases, the grants are extended to include the summer following the academic year. (For information, write to the Institutes Section of NSF.)

Nearly 200 *in-service institutes* which meet on Saturdays or during after-school hours are conducted each year by colleges and universities under NSF grants. Teachers who attend may receive allowances for books and limited travel. There are no fees or tuition. (For information, write to the Institutes Section of NSF.)

Under an NSF program, for *research participating,* qualified teachers may take part during the summer months in the laboratory research programs of colleges and universities. Actual work on projects with experienced scientific investigators, in the laboratory or in the field, may be augmented by appropriate courses or seminars. This work may frequently be applied toward the research requirements for a master's degree or a doctorate. Stipends and certain allowances, including those for tuition and fees, are provided. (For information, write to the Special Projects in Science Education Section of NSF.)

To supplement these five programs, NSF offers a variety of other study opportunities, including *lecture conferences, work conferences*—at which teachers, scientists and educational administrators meet to consider problems of science education—and *group study* and *home study* programs. (For information, write to the Special Projects in Science Education Section of NSF.)

For students. Study opportunities for students are made available under NSF grants during the school year and during the summer months. Extracurricular science programs conducted during evenings or on weekends are supported through grants to local colleges and universities, as are experimental, one-of-a-kind projects which do not fit clearly into the specifically defined programs.

Summer training is open to high-ability students through programs especially designed by colleges, universities and nonprofit research organizations. (For information, write to the Special Projects in Science Education Section of NSF.)

Course development. Programs to design new courses in physics, chemistry, biology, mathematics

and other similar disciplines are now being actively supported by NSF. The foundation *does not* help to promote the general acceptance of these courses; but it expects that they will be made easily available, in part through commercial channels, to any school that may wish to use them.

The only course now complete is that created by the Physical Science Study Committee. (*A description of this physics curriculum is contained in the article beginning on page 90.* For more information, write to the Physical Science Study Committee.)

A new course in mathematics is nearly complete. Textbooks and teachers' guides for grades seven through 12 are in print. A number of special publications, including monographs and study guides for teachers, are being drafted. (For information, write to the School Mathematics Study Group.)

Preliminary versions of materials for two separate chemistry courses and three versions of a biology course are now being tested in pilot classes. Biology materials are also being tested and an earth science source book will soon be published. (For information, write to the Chemical Bond Approach Project, the Chemical Education Materials Study, the Biological Sciences Curriculum Study and Dr. Robert L. Heller.)

(For information about other NSF programs in course development, write to the Course Content Improvement Section of NSF.)

Classroom aids. Classroom visits by outstanding scientists, mathematicians and engineers are arranged through professional scientific societies under NSF grants. (For information, write to the Special Projects in Science Education Section of NSF.)

Libraries of distinguished books on science and mathematics—more than 400 sets of about 200 books each—are available on loan through an NSF grant. (For information, write to the American Association for the Advancement of Science.)

text continued on page 98

A PROBLEM OF BALANCE

Observations on the role of science in the high school curriculum. . . . From a tape-recorded interview with Bowen C. Dees, Assistant Director for Scientific Personnel and Education, National Science Foundation.

"How important *is* science? Can science students dispense with foreign languages, English or social sciences in high school? Could these subjects be eliminated in order to clear the way for more science study?

"My answer must be categorically no. They cannot be eliminated. They're necessary as a background for the student who wants to go into science. More important, they're necessary because these students are citizens. The basic function of American secondary education, public and private, has been largely to prepare the citizen rather than the specialist, and I think one would have to look hard to find any substantial body of people who believe we should change that function.

"But now the question has been raised, 'Are we putting too much emphasis on science?' Many people have argued, of course, that we must fight for balance; we argue this way too. But our position is that there has been an imbalance in our schools—and this holds at all levels, elementary through college—which has been detrimental not only to science but to the culture as a whole. No human being can live in the Western world today without a continual contact with all kinds of scientific and applied-scientific artifacts. Everyone, whether or not he plans to be active in science or engineering, must know something about science and engineering, just in order to be able to live his life in a full way.

"For years we've had a tremendous unconcern about scientific illiteracy in this country. I personally feel that the pendulum has not yet swung too far in the other direction. We here at NSF know that we ought not to do anything to make it swing too far in the other direction; our role, rather, is to see that it doesn't stay too far in the direction of inadequate attention to science.

"This isn't just a problem for schools. The vast majority of American citizens don't know very much about science. They don't understand the implications of certain of the really serious public issues that have been born of scientific research and development in the last few decades. Yet these issues are playing an important role on the international scene. They're increasingly prominent in the newspapers every day. How can a citizen understand these issues until he's a little more firm in his understanding of the scientific developments that underlie them?

"But this understanding must not be accomplished at the expense of the social sciences and of English. Too little attention has been given to English as contrasted with some of the other subject areas. Purely from the standpoint of who makes a good scientist, the best single predictor of success seems to be the student's ability to interpret a simple paragraph of non-scientific text. In short, students who know how to read well are likely to be more successful at science than those who don't—and this is one of the problems we're going to continue to face."

A source book of laboratory and field studies for biology is being published in a program sponsored by the National Academy of Sciences—National Research Council under an NSF grant. (For information, write to Dr. C. A. Lawson.)

Films for classroom use and for telecasts are being produced, under at least 19 NSF grants, in the fields of anthropology, biology, chemistry, engineering, mathematics, physics and general science. (For information, write to the Course Content Improvement Section of NSF and/or the Interdisciplinary Committee on Film and Television in Science and Mathematics Education.)

Laboratory aids are also being developed under an extensive program of individual grants—56 have been authorized this year—in a wide array of subjects. Those specifically intended for secondary schools include apparatus for courses in math, biology, meteorology and psychology. (For information, write to the Course Content Improvement Section of NSF.)

Other services

Library. Lists of recommended books are available to school libraries that wish to increase their science collections. (For information, write to the American Association for the Advancement of Science.)

Guidance. Science career information is being developed and distributed, with NSF support, by various professional societies. (For information, write to the Special Projects in Science Education Section of NSF.)

Adult Education. Materials for adult discussion groups are available under an NSF program to increase public awareness of the facts and significance of contemporary science. (For information, write to the Special Projects in Science Education Section of NSF.)

Junior college. NSF programs for colleges are even more prolific than those for elementary and secondary schools. (For information, write to NSF. Two booklets are especially useful: "Program Activities" and "Programs for Education.") **End**

DIRECTORY

of organizations mentioned in this article

Division of Scientific Personnel and Education, National Science Foundation, Washington 25, D.C.
Course Content Improvement Section
Institutes Section
Special Projects in Science Education Section

American Association for the Advancement of Science, 1515 Massachusetts Avenue, N.W., Washington 5, D.C.
Secondary School Fellowships
The Traveling Elementary School Science Library Program
The Traveling High School Science Library Program

Biological Sciences Curriculum Study, University of Colorado, Boulder, Colo.
Dr. Arnold W. Grobman, Director

Chemical Bond Approach Project, Department of Chemistry, Earlham College, Richmond, Ind.
Dr. Laurence E. Strong, Director

Chemical Education Materials Study, Department of Chemistry, Harvey Mudd College, Claremont, Calif.
Dr. J. A. Campbell, Director

Elementary School Science Project
University of California
Berkeley 4, Calif.
Dr. Robert Karplus, Director

Dr. Robert L. Heller
Department of Geology
University of Minnesota
Duluth, Minn.

Dr. Elmer Hutchisson
American Institute of Physics, 335 E. 45th St., New York City 22

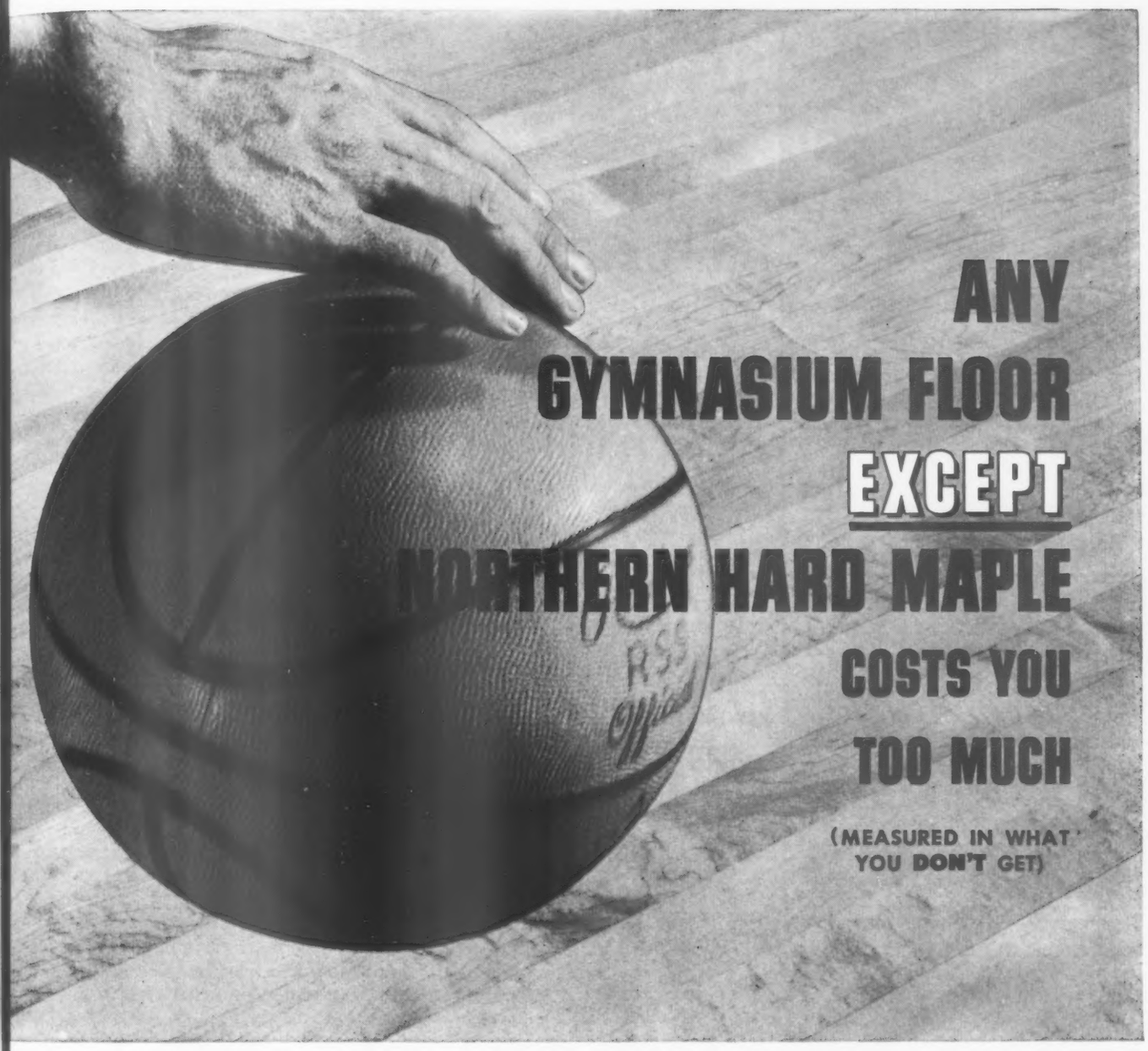
Interdisciplinary Committee on Film and Television in Science and Mathematics Education
Advisory Board on Education, National Academy of Sciences—National Research Council, 2101 Constitution Avenue, N.W., Washington 25, D.C.
Mr. Robert Green, Director

Dr. C. A. Lawson
Department of Natural Science, Michigan State University, East Lansing, Mich.

Dr. J. N. Payné
University School, University of Michigan, Ann Arbor, Mich.

Physical Science Study Committee
Educational Services, Inc., 164 Main Street, Watertown 72, Mass.
Dr. Jerrold L. Zacharias, Director

School Mathematics Study Group
Drawer 2502A Yale Station, New Haven, Conn.
Dr. E. G. Begle, Director



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BOOK EXCERPT

Three ways you can predict future school enrollments

There are three basic methods for predicting school enrollments. One is a guess; a second, an estimate. The third can be called a valid prediction. Each has its place in this complicated area. In this SM book excerpt, the three methods are described and compared in language anyone—layman or expert—can understand.

■ ■ ■ One of the greatest problems facing all school districts—especially those with very rapid growth—is the need to accurately predict future school plant needs.

In its 13 years as school consultant, the Center for School Services of New York University has been faced with this problem on numerous occasions. Now, in a monograph titled "Predicting School Enrollments,"* the center publishes a primer designed to give even laymen an insight into the problems, possibilities and methods used to predict future enrollments.

Although the foreword to this manuscript states that "one must have special statistical competence in order to make valid pupil enrollment projections," the booklet itself gives examples of situations where such help is unnecessary. At the same time, it provides a basic understanding of the problems involved, making it possible to intelligently discuss these problems when the help of statistical experts is needed.

Subjects discussed in the monograph include the need for accurate projections, the methods by which projections can be made, how to take a school census and a step-by-step chapter on how to compute a school enrollment projection.

The booklet is written in the simplest possible nontechnical language and its charts are remarkable for their simplicity and clarity.

The following discussion of the different methods for predicting school enrollments is taken from chapter II of the monograph.

* PREDICTING SCHOOL ENROLLMENTS By Roscoe C. Brown, Jr., *Center for School Services, School of Education, New York University.* 52 pages. $1.50

■ ■ A person involved in predicting school enrollments may use methods that range from sheer guesswork to scientific prediction techniques. Persons unfamiliar with accepted techniques of prediction are quite apt to use an educated guess to make their prediction. Where school enrollment is relatively stable, educated guesses often prove to be right. However, this is risky business in school districts where rapid population changes have taken place.

There are several refined methods of predicting enrollments. A common element in each procedure is utilization of data on previous and current school enrollment. Aside from this similarity, each method makes use of different factors in arriving at the predictions. Three of the best known methods of prediction will be discussed in this chapter. These methods are: (1) The "growth curve" method, (2) The "birth survival" method, and (3) The "corrected promotion" method.

The growth curve method

The "growth curve" method utilizes school enrollment data from past years to establish a trend or pattern to predict future enrollment. Fairly complex mathematical procedures such as regression analysis and time series analysis are used to establish the direction of the changes or trend in enrollment. For example, if the school enrollment in the last five years has been decreasing steadily, the formula developed from the analysis would indicate a downward trend. Conversely, if the analysis showed a gradual increase in enrollment, the prediction would show a slight increase from year to year. The "growth curve" method is most effective in localities where there are no significant variables such as the building of new housing developments or the expansion of non-public school facilities that would affect school enrollments. There are, however, few communities in which the factors influencing school enrollments are stable enough to warrant the use of this method with confidence. Experience has shown that even under optimum conditions this method is not very reliable in predicting public school enrollments.

The major limitation of the "growth curve" method is that it does not reflect changes in the age-grade distribution of school children. If, for example, there will be a larger number of children in the fourth, fifth, and sixth grades in a given year than there will be in the first, second, and third grades, it would be impossible to determine this from a prediction based on the "growth curve" method. This is because the "growth curve" method uses only total school enrollment figures; therefore, predictions using this method can not indicate how many children there will be in each grade.

The birth survival method

When the ratio of the children born in a certain year is used to predict the number of children in the public schools a given number of years later, the method is called the "birth survival" method. The method gets its name from the fact that births in a

text continued on page 105

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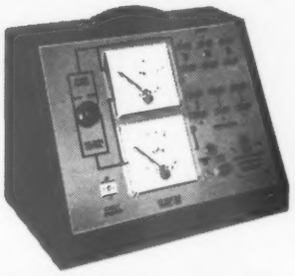

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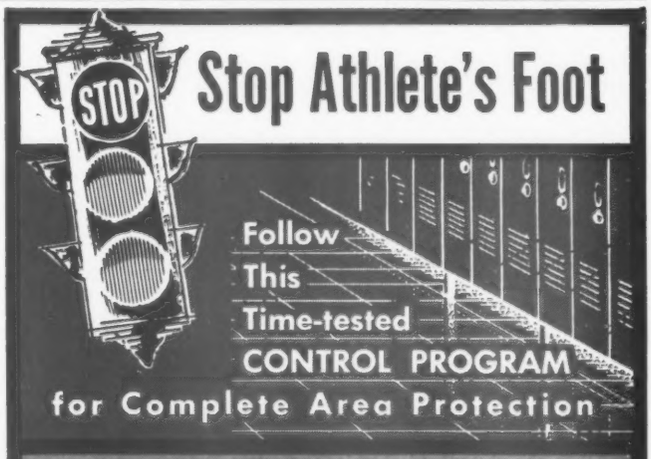

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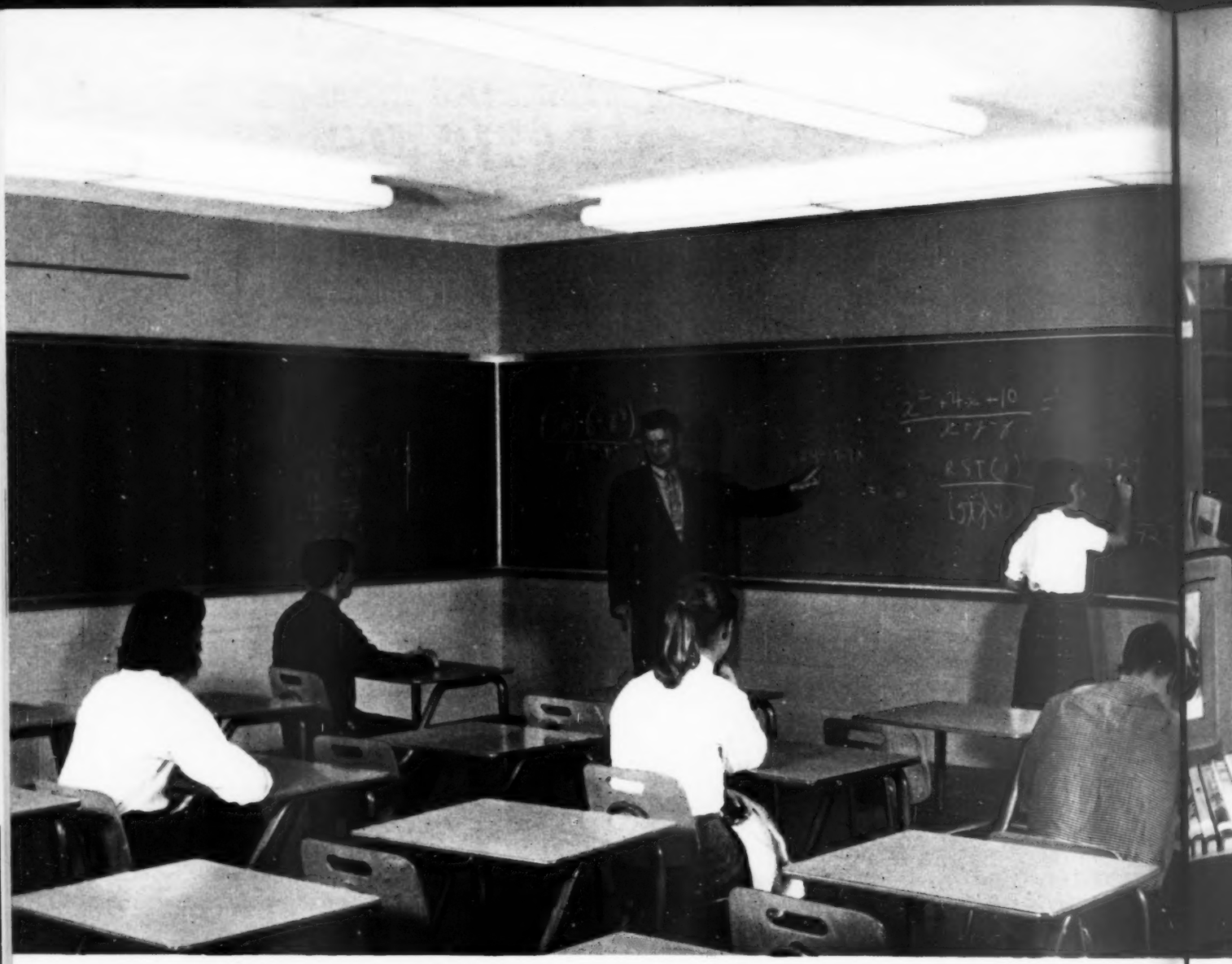

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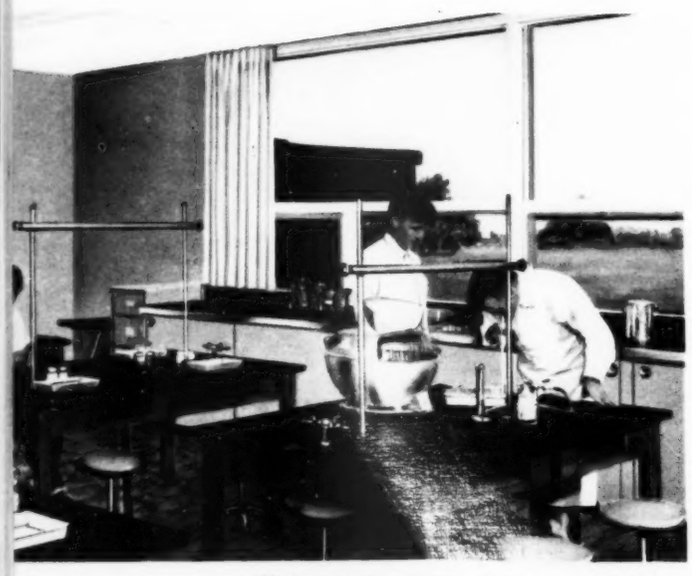

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given year are used to predict how many children will be in a given grade in the public schools so many years in the future. Births five years ago can be used to predict first grade enrollment and so on.

An example of the use of the "birth survival" method follows. If 100 children were born five years ago and 80 enter the public school kindergarten, the birth survival ratio is 80%. The ratio for the five most recent years is computed, then averaged and used as the basis for predicting the kindergarten enrollment in the future. Let us say that the average "survival" ratio is 85%. To predict the kindergarten enrollment, the births four years ago would be multiplied by .85.

In using the "birth survival" method to predict enrollments for a period of longer than five years, it is necessary to estimate future birth rate. This is not difficult, however, if the birth rate has remained fairly stable for the last two or three years. In cases where the birth rate trend is upward or downward, it is necessary to estimate the change from year to year. To do this, factors such as the ages of the housewives should be examined.

While the "birth survival" method is more precise than the "growth curve" method because it uses two factors, births and enrollments, its value is limited because it does not accurately account for such factors as movement of new children into the community, expansion of private or parochial facilities, and movement of pupils from grade to grade. The method is frequently used in large municipalities to make plans for the entire school system, but is of limited assistance to them in predicting the enrollments in specific sections of the municipality.

Smaller school districts should avoid using the "birth survival" method if they can obtain the information necessary to use the "corrected promotion" method.

The corrected promotion method

The "corrected promotion" method is considered to be the most accurate method of predicting school enrollments. Factors which influence predictions are used to make corrections of the predictions for each grade for each year. Thus, it is possible to use different factors to correct the predictions for each grade. For example, some children may attend the public schools in kindergarten and then transfer to the parochial or private school in the community. This correction would be made on all projections of first grade enrollments from the kindergarten. Similarly, there may be more school children moving into the community in one grade than in another. The "corrected promotion" method could account for this in the prediction of enrollments for each grade.

The information needed for the "corrected promotion" method includes (1) pre-school census data, (2) birth reports, (3) past and present school enrollments, (4) private, parochial and out of district school attendance, (5) pupil dropout rates, (6) data on migration of children in and out of the school. In the experience of the author, the use of the "corrected promotion" procedure has produced predictions that are usually accurate within 2% of the actual enrollment. **End**

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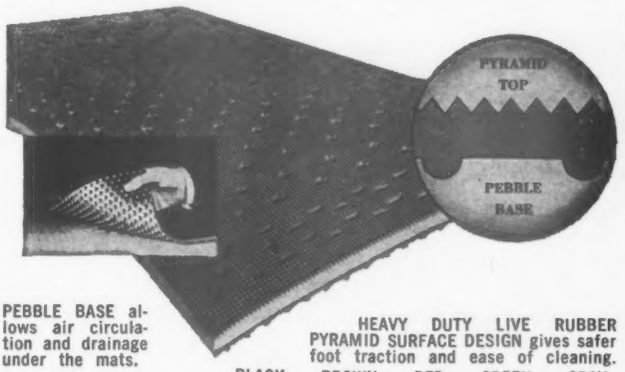

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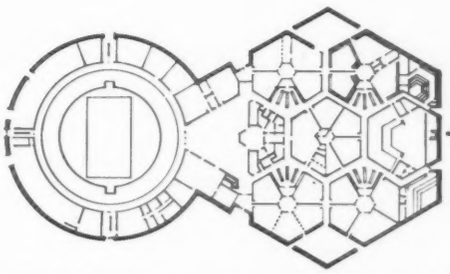
POSITIVE THINKING ABOUT SCHOOL AIR CONDITIONING

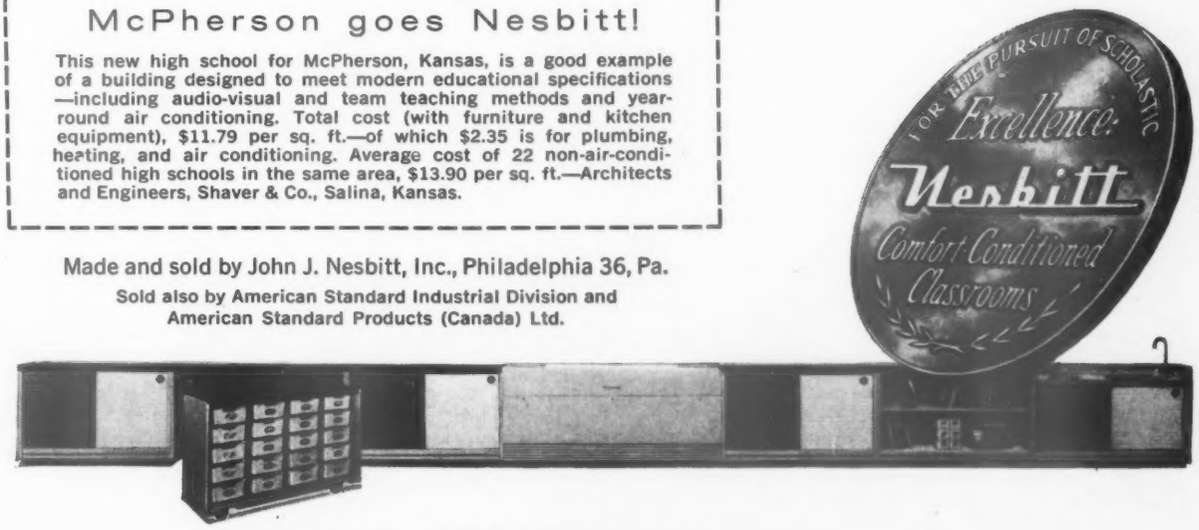
Changing educational patterns demand flexible schools with learning spaces equipped for year-round air conditioning under unitary control—as an economic necessity based upon educational productivity for the life of the building.



McPherson goes Nesbitt!

This new high school for McPherson, Kansas, is a good example of a building designed to meet modern educational specifications —including audio-visual and team teaching methods and year-round air conditioning. Total cost (with furniture and kitchen equipment), $11.79 per sq. ft.—of which $2.35 is for plumbing, heating, and air conditioning. Average cost of 22 non-air-conditioned high schools in the same area, $13.90 per sq. ft.—Architects and Engineers, Shaver & Co., Salina, Kansas.

We shall be glad to send you the complete story on Nesbitt year-round air conditioning for schools



Made and sold by John J. Nesbitt, Inc., Philadelphia 36, Pa.

Sold also by American Standard Industrial Division and American Standard Products (Canada) Ltd.

(Circle number 777 for more information)

In your school planning, include the beauty and quality of school furniture by All-Steel

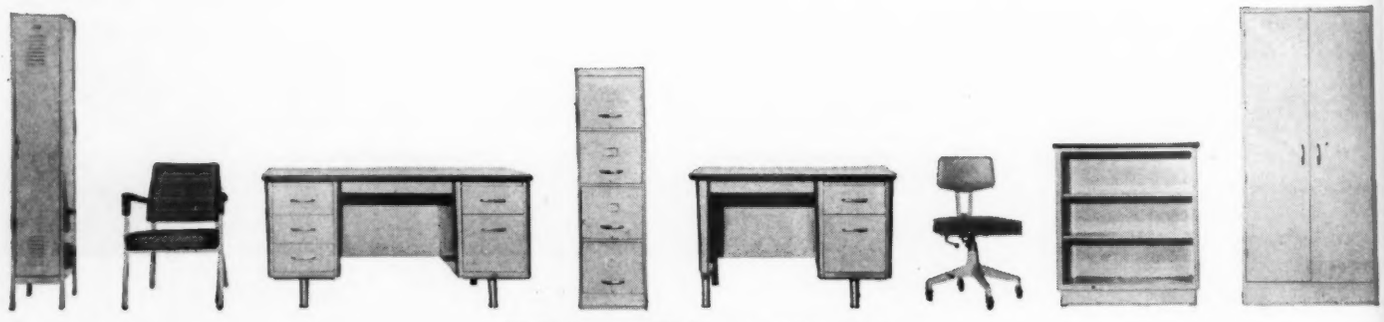
All-Steel's complete line of steel office furniture and lockers make school layouts and planning easier and more efficient. The beautiful styling lends itself to modern schools. ASE Furniture is quality built to last and give years of fine service and performance. Whether for replacement of a single classroom teacher's desk, a completely new administrative office, or for files, storage cabinets or lockers, call your ASE dealer or write for illustrated catalog.

ASE

All-Steel

ALL-STEEL EQUIPMENT INC.
Aurora, Illinois

DESKS • CHAIRS • L-UNITS • CREDENZAS • TABLES
BOOKCASES • LOCKERS • FILING CABINETS
STORAGE CABINETS



(Circle number 702 for more information)

Winners School Public Relations Awards

Ten entries in eight categories win the highest acclamation—a citation for excellence. Eleven others are cited for outstanding achievement. And the judges present two special awards.

More than 350 individual entries were received from 41 states in the first annual School Public Relations Awards contest.

The contest was sponsored jointly by SCHOOL MANAGEMENT and the School Board Publications Association of New Jersey.

Entries were submitted in five categories, "Outstanding school district periodicals"; "Outstanding new school building campaigns"; "Outstanding annual reports on school activities"; "Outstanding teacher recruitment brochures"; and "Outstanding special purpose projects."

Entries in the fifth category (special purpose projects) fell into four major groupings and were so divided. These groupings included staff communications, budget and finance brochures, curriculum and guidance information, and special purpose presentations.

The quality of the entries, in the words of the judges, "was extremely high—surprisingly so, since for the most part they were prepared by nonprofessionals.

"The School Public Relations Awards contest as we understand it," the judges continued, "was designed not so much to honor a particular district or group of districts for an outstanding job, but to improve the over-all quality of this important part of the school program. Certainly if all school public relations efforts were of the same high quality as

THE JUDGES

Lawrence Derthick
Assistant Executive Secretary,
National Education Association

Paul Zucker
Executive Vice President,
Ruder & Finn, Inc.,
Public Relations Counsel

N. L. Engelhardt, Jr.
Educational Consultant,
Engelhardt, Engelhardt & Leggett

Donald Matthews
Assistant Superintendent, Dallas;
President, National School
Public Relations Association

Milton Steinhauer
Chairman, Dept. of Administration,
School of Education,
Rutgers—The State University

Ben Brodinsky
Vice President,
Educational Press Association;
Editor-in-chief, Croft Services

Robert Luse
Assistant to Executive Director,
N. J. Federation of School Boards

Paul Abramson
Editor,
SCHOOL MANAGEMENT

most of these entries, they would go a long way towards giving the public the information it needs and wants."

The criteria

Entries in each of the categories were judged on the basis of initial impact, over-all appearance, clarity of writing, ability to get a point across, and apparent knowledge of the audience. The effectiveness of the material was also considered, although a good effort in a losing cause was not necessarily eliminated.

All entries were received by the School Board Publications Association, Rutgers—The State University, New Brunswick, N. J. There they were classified and numbered preparatory to a preliminary screening.

A committee of five members of the executive board of the SBPA screened all entries shortly after the deadline. The recommendations of this screening committee were submitted to the national judges at New York's Sheraton East Hotel on July 6. The judges, however, were given a chance to review all entries.

The national judges (*see opposite page*) considered entries in each category separately. Each judge had an individual score sheet on which to note his preferences and, where appropriate, to make comments on individual entries of the total group.

The awards

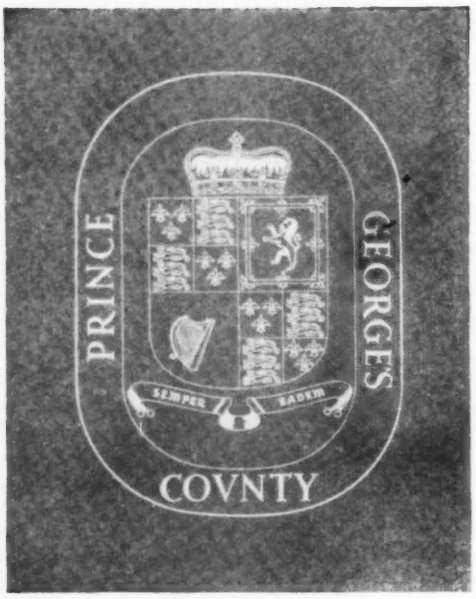
Judges were asked to award at least one Citation for Excellence, Citation for Outstanding Achievement and Honorable Mention in each of the categories.

Altogether the judges bestowed 10 Citations for Excellence, 11 Citations for Outstanding Achievement and two Special Citations—for a superior over-all district public relations program, and a special and unusual approach to school-community relations.

The outstanding entries, and the names of all districts winning citations and honorable mentions, appear on the following pages.

SPECIAL CITATION

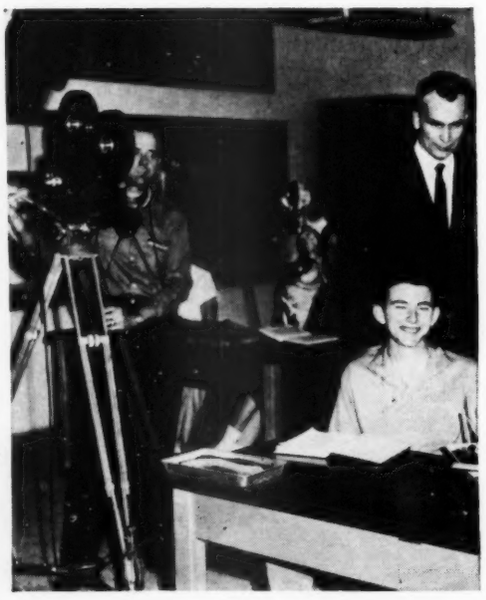
Board of Education, Prince George's County, Upper Marlboro, Md.



"For its full understanding and use of the best techniques of public relations," a Special Citation is awarded to the Board of Education of Prince George's County. The consistent high quality of its publications—six of which won prizes in the individual categories—attests to the great emphasis this district places on an informed and active citizenry.

SPECIAL CITATION

Board of Education, Ector County, Odessa, Texas

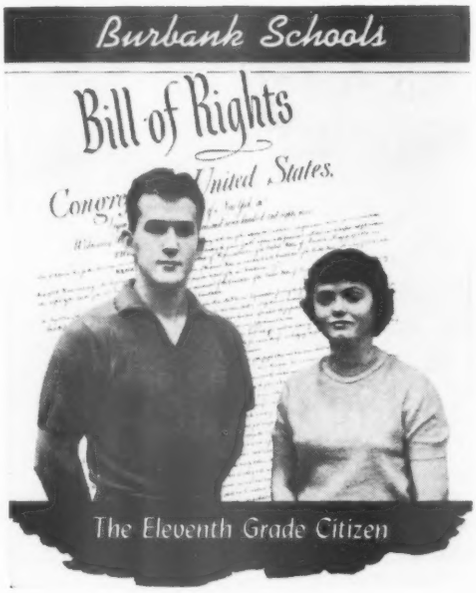


The Ector County Board of Education is awarded a Special Citation for an unusual approach to school-community relations. School personnel, entirely by themselves, wrote, directed and produced three half-hour television programs concentrating on classroom activity. The programs were shown as a public service by local stations during prime evening time. Appraising films submitted as a contest entry, the judges said, "The programs could have been no less than remarkably effective in cementing relations with the public."

OUTSTANDING PERIODICALS 1

CITATION FOR EXCELLENCE

Burbank, Calif., Board of Education



Burbank Schools

"Burbank Schools *is one of the few regularly issued publications which gets right to the heart of the public's interest in education." Each issue is devoted to a single grade level or particular topic, and is written by parents, teachers and administrators conversant with that topic. At the end of the school year, the monthly issues are bound and become the superintendent's annual report.*

CITATION FOR OUTSTANDING ACHIEVEMENT

Scranton, Pa., Board of Education

The Scranton Public Schools Newsletter *was selected for its comprehensive coverage and interpretation of school activities.*

HONORABLE MENTION

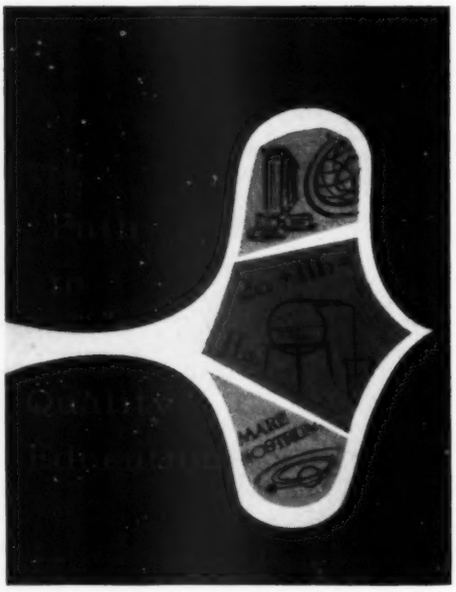
Glen Rock, N.J.—*Glen Rock Schools*
Boulder Valley, Colo.—*School News*
Nyack, N.Y.—*Inside Our Schools*
Prince George's County, Md.—*How We Teach*
Collingswood, N.J.—*Educational Challenge*
Waverly School District, Lansing, Mich.—*The Waverly News*
Pittsburgh, Pa.—*PTA Information Bulletin*
Culver City, Calif.—*School Bulletin*

OUTSTANDING BUILDING CAMPAIGN LITERATURE 2

CITATION FOR EXCELLENCE

Best single brochure

Collingswood, N. J., Board of Education



"The Path to Quality Education *pointedly tells the whole campaign story in an attractive and simple format.*"

Best full campaign

Berea, Ohio, Board of Education

"A top community relations effort by nonprofessionals." The campaign effectively gave the public all the school facts.

CITATION FOR OUTSTANDING ACHIEVEMENT

Carmel, N.Y., Board of Education
For a "straightforward factual presentation" in a single piece of campaign literature.

Champaign, Ill., Unit School District #4, Board of Education
For a "building campaign that was a superior presentation of facts and need."

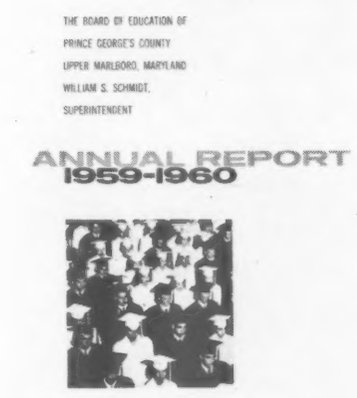
HONORABLE MENTION

Union County High School District #1, Springfield, N.J.
Norwalk, Ohio
Tucson, Ariz.
Neptune Township, Ocean Grove, N.J.
Harrington, Del., Special School District
Akron, Ohio
Sweet Home Central School District, Buffalo, N.Y.

OUTSTANDING ANNUAL REPORTS 3

CITATION FOR EXCELLENCE

Prince George's County, Board of Education, Upper Marlboro, Md.



"The most complete, interesting and readable report of a district's activities." Each year's report is developed around a single topic. This one elaborated on the duties and responsibilities of all personnel required to manage, operate and maintain the school district. It was written in clear, concise English by the staff, compiled and edited by a publication committee.

CITATION FOR OUTSTANDING ACHIEVEMENT

Akron, Ohio, Board of Education

This report, That Each May Develop His Abilities, *tells of new developments in Akron's public education.*

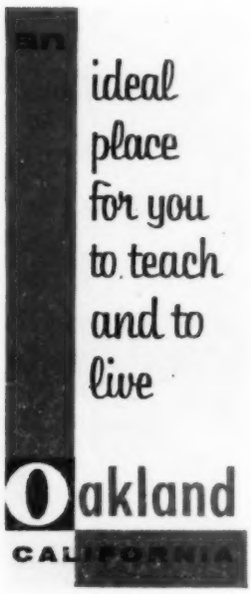
HONORABLE MENTION

Toledo, Ohio
Clayton, Mo.
Worthington, Ohio
Aldine Independent School District, Houston, Tex.
Albuquerque, N.M.
Pittsburgh, Pa.
Milwaukee, Wisc.
Montgomery County, Rockville, Md.
Paragould, Ark.
Youngstown, Ohio

OUTSTANDING TEACHER RECRUITMENT BROCHURES 4

CITATION FOR EXCELLENCE

Oakland, Calif., Board of Education



"Clearly and objectively tells what teaching candidates want to know about Oakland's personnel policies and procedures, and the educational climate of the community." When sent to a prospective teacher, the brochure is accompanied by folders and a faculty handbook which make up a practical working guide for the newly employed.

CITATION FOR OUTSTANDING ACHIEVEMENT

Penfield, N.Y., Board of Education

"Portrait of an Education *resulted in more than 450 applications for employment.*"

HONORABLE MENTION

Clayton, Mo.—*Clayton Public Schools*

Smithtown, N.Y.—*Your Introduction to Smithtown*

Ely, Minn.—*Ely Public Schools*

San Juan School District, Carmichael, Calif.—*Your Future*

Oscoda, Mich.—*Oscoda Area Schools*

Albuquerque, N.M.—*A Wonderful Place to Live and Teach*

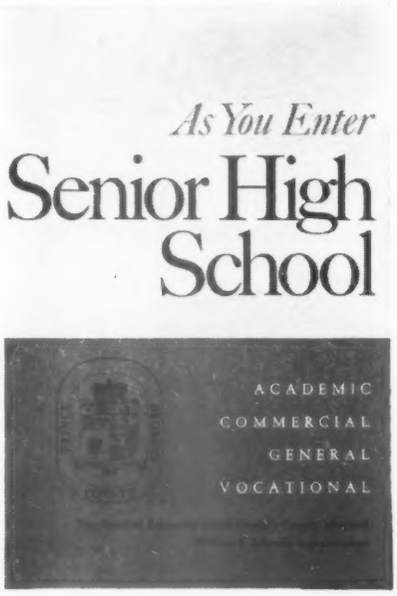
Pinellas County, Clearwater, Fla.—*Live and Teach in Pinellas County*

Hayward, Calif., High School District—*The Best in Teaching Opportunities*

OUTSTANDING SPECIAL PURPOSE PROJECTS —CURRICULUM AND GUIDANCE— 5

CITATION FOR EXCELLENCE

Prince George's County, Board of Education, Upper Marlboro, Md.



Welcome to Junior High School
As You Enter Senior High School
The College in Your Future

Three "beautifully done" guidance and curriculum brochures for students. The first is orientation for pupils entering the seventh grade. The second assists students in programing their courses in senior high. The third is a comprehensive source of information about higher education and requirements for college admission.

CITATION FOR OUTSTANDING ACHIEVEMENT

Hayward, Calif., High School District Board of Education
For descriptive brochures in each of eight curriculum areas.

Prince George's County, Board of Education, Upper Marlboro, Md.
For a complete curriculum guide.

HONORABLE MENTION

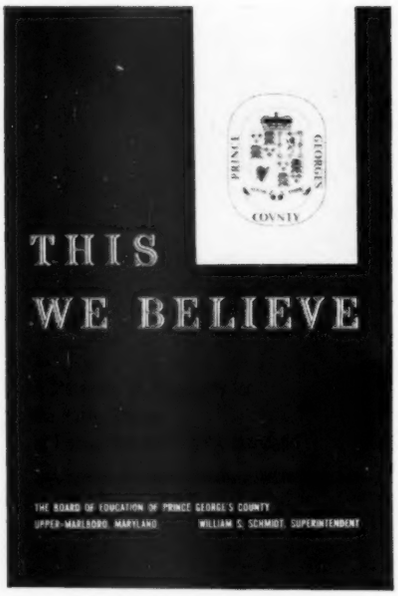
Milwaukee, Wisc., for a special services handbook.
Glen Rock, N.J., for a science booklet.
Gadsden, Ala., for a guide to college scholarships.

OUTSTANDING SPECIAL PURPOSE PROJECTS
——STAFF COMMUNICATIONS——

6

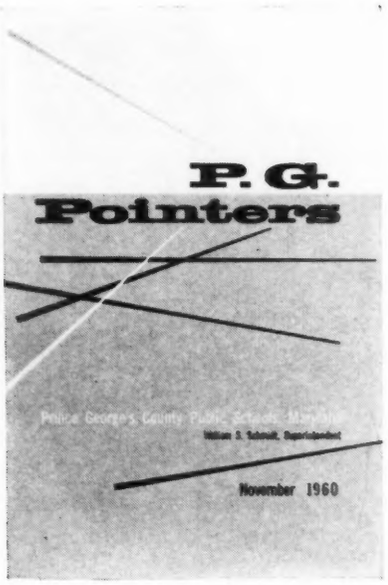
CITATION FOR EXCELLENCE

Prince George's County, Board of Education, Upper Marlboro, Md.



This We Believe

"An outstanding statement of a school district's philosophy." A series of meetings with teachers, board members and the administrative staff resulted in this well-defined statement of the district's goals.



P.G. Pointers

"An excellent way to share good teaching techniques with others in the same district." This magazine is published three times a year. It is written by and for teachers and principals as a medium for the exchange of ideas.

CITATION FOR OUTSTANDING ACHIEVEMENT

Pinellas County, Clearwater, Fla., Board of Education
The ABC's of Custodial Services *"solves a special communications problem between the custodial staff and the administration, the instructional staff and the public."*

HONORABLE MENTION

Oakland, Calif.—orientation folder for new teachers.

Collingswood, N.J.—*Challenge of Change*, a booklet describing a plan for educational improvement.

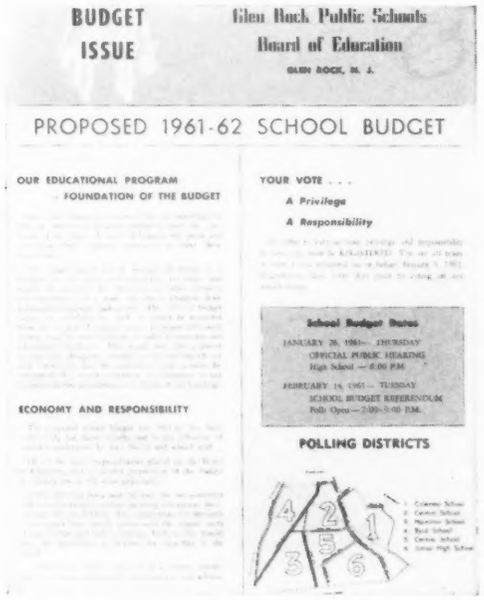
Harford County, Bel Air, Md.—a bus driver's handbook of laws and policies.

Milwaukee, Wisc.—an orientation booklet for new staff members.

OUTSTANDING SPECIAL PURPOSE PROJECTS —BUDGET AND FINANCE— 7

CITATION FOR EXCELLENCE

Glen Rock, N.J., Board of Education


BUDGET ISSUE

Glen Rock Public Schools
Board of Education
GLEN ROCK, N. J.

PROPOSED 1961-62 SCHOOL BUDGET

OUR EDUCATIONAL PROGRAM
FOUNDATION OF THE BUDGET

YOUR VOTE . . .
A Privilege
A Responsibility

School Budget Dates
JANUARY 26, 1961— THURSDAY
OFFICIAL PUBLIC HEARING
High School — 8:00 P.M.
FEBRUARY 14, 1961— TUESDAY
SCHOOL BUDGET REFERENDUM
Polls Open—2:00-9:00 P.M.

ECONOMY AND RESPONSIBILITY

POLLING DISTRICTS

"A clear and easily digested interpretation of school expense and revenue accounts." It is issued annually just before the budget hearing and referendum. Cost analysis is "well presented editorially and graphically."

CITATION FOR OUTSTANDING ACHIEVEMENT

Akron, Ohio, Board of Education
For conducting "a comprehensive budget campaign resulting in the most votes ever recorded in the city's history."

Collingswood, N.J., Board of Education
For "an appealing, effective, budget brochure."

HONORABLE MENTION

Waverly School District, Lansing, Mich.
Palo Alto, Calif., Unified School District
Lincoln Elementary School District, Yuba City, Calif.
Sweet Home Central School District, Buffalo, N.Y.

OUTSTANDING SPECIAL PURPOSE PROJECTS 8

CITATION FOR EXCELLENCE

Pittsburgh, Pa., Board of Education

"The book serves a much-needed purpose in explaining the problems of children just beginning their formal education." Prepared for parents whose children are entering kindergarten and first-grade classes, this booklet explains how parents can help introduce their youngsters to school, and what they will be doing in school.

CITATION FOR OUTSTANDING ACHIEVEMENT

Brookfield, Ill., School District #95, Board of Education
"Without frills or fancy words, this kindergarten handbook really helps parents." It explains everything from reading readiness to how children should dress.

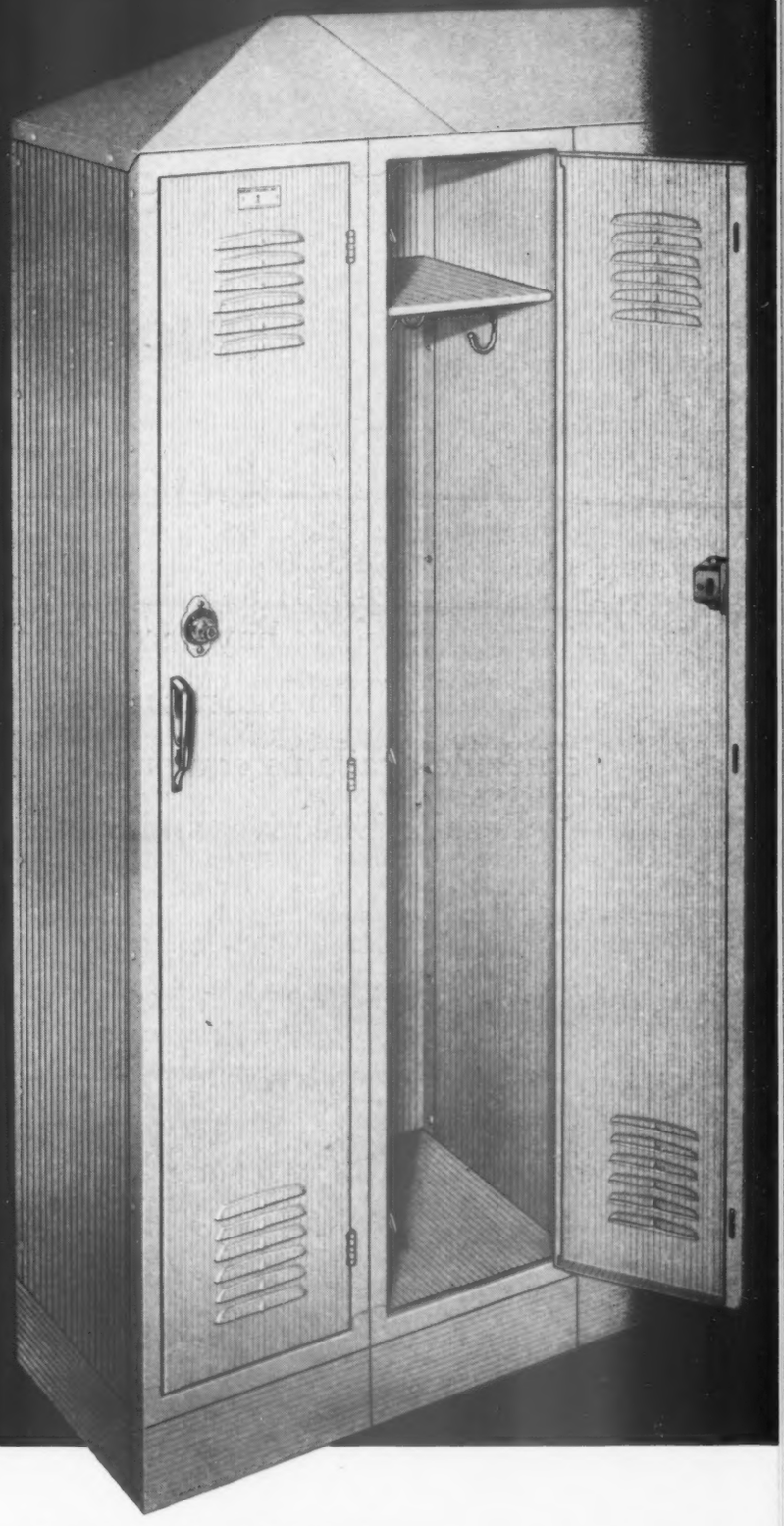
HONORABLE MENTION

Milwaukee, Wisc., for *The Primary School*, an information booklet explaining the organization and operation of Milwaukee's ungraded primary school program.

Port Jefferson, N.Y., for *Education in Port Jefferson*, an information booklet for prospective residents of the community.

ONLY MEDART GIVES YOU THESE EXCLUSIVE FEATURES

in all lockers regardless of size at no extra cost!



1. **DOORS AND BODY PARTS MADE OF MEDART "RIB-INFORCED" STEEL**
   Provides greater rigidity; protects against distortion and surface scratches.
2. **SEVEN EXTERIOR COLORS**
   School-approved decorator colors in tough, chip-resistant baked enamel finishes: Surf Green, Colonial Blue, Desert Sand, French Grey, Slate Grey, Coral Rose, Olive Green.
3. **HARMONIZING LIGHT BEIGE INTERIORS**
   Brighter, lighter neutral finish blends with any exterior colors for beautiful two-tone combination.
4. **"HIPPED ROOF" TOPS**
   Continuous twin-slope 20-gauge steel hoods *over regular locker tops* look better and last longer than old-fashioned single-slope tops.
5. **20-GAUGE EXPOSED END PANELS**
   Heavier, stronger "Rib-Inforced" ends give rugged protection against denting, scratching and other damage.
6. **GALVANIZED STEEL COMPARTMENT BOTTOMS**
   "Rib-Inforced" design. Provides positive protection against rust and rough, careless use.
7. **PRE-LATCHING GALVANIZED LOCKROD ON ALL DOORS (including box locker sizes)**
   Rubber silenced, with lift type chrome handle and integral padlock strike.
8. **COMPLETE LOCKERS OF GALVANIZED STEEL**
   For highly humid and corrosive climates, lockers of hot-dipped galvanized "Rib-Inforced" steel are available in all standard sizes and colors.

Medart Lockers top the field for durability, appearance, practical features and low-cost maintenance. Offered in a complete line for every requirement, including Wardrobes, Basket Racks and Locker Benches.

Medart PRODUCTS INC

Quality Products Since 1888

Medart Products, Inc.

4427 Geraldine Ave., St. Louis 15, Mo.

STEEL LOCKERS • GYM SEATS • BASKETBALL BACKSTOPS

(Circle number 787 for more information)

How to stretch your audio-visual budget

Unable to buy needed projection equipment and darkening facilities, schoolmen in Westchester, Ill., found a better way to schedule available equipment and to show films in lighted rooms. Result: Effective, and extensive, film programing at low cost.

By W. J. HEIMANN
Business Manager
Westchester, Ill.

FULL UTILIZATION . . .

Reservation "calendar" enables teachers to schedule audio-visual materials for maximum use. A-V director confirms reservations.

■ ■ ■ Nearly every enterprising school district is squeezed between pressures to acquire the best in educational facilities, and a tight budget that can't quite turn the trick.

As business manager of our district, I was caught in that squeeze last year. We had just completed a new elementary school and wanted to use instructional films there, but two problems faced us:

1. Our budget would not stand the high cost of purchasing several sets of projectors and screens.

2. We could not afford to darken every classroom for films.

We could, and did, equip the school auditorium for showing films, but each of our teachers was reluctant to uproot her class, march pupils through halls, and lose 15 minutes every time she had a film to show. From time to time, of course, films were exhibited to groups in the auditorium, but this hardly approached what we really needed—an integrated, daily film program *in class,* for every class.

Lacking sufficient equipment, we first had to devise a way to schedule whatever equipment we did have, so as to insure its maximum use. For this purpose, the school's audio-visual director developed a practical scheduling system. Here's how it works:

In the teachers' lounge, a section of the bulletin board is set aside for notices of available audio-visual materials. There is a calendar-type arrangement of pockets and reservation slips *(see photo, opposite page).* To make a reservation, a teacher fills in her name and room number, notes the time and date she wants the equipment, and lists the equipment and materials she will need. The reservation slip is put into the appropriate pocket. At this point it is easy for her to see if another teacher has requested the same materials for the same time.

Every afternoon, the audio-visual director confirms all reservations (making notes for himself) and puts the slips back into the pockets. Next morning, the teacher picks up her confirmation and and is able to plan her class time accordingly.

This, however, solved only one of our problems. We were still faced with darkening classrooms, at $250 per room.

Making a break with tradition, we purchased a rear projection unit that could show films in rooms that were sunshine bright. I say "break with tradition" because both technically and psychologically, everyone thinks that films must be shown in darkened rooms. That, we have found, is not true.

The rear projection unit is a combination table and screen box that produces an image equal in size to a 30″ TV receiver. An ordinary projector, fitted with a wide-angle lens, beams the light into the rear-projection box where a mirror diverts the image onto the back of the viewing screen. So, in effect, the students feel they are watching a movie on television.

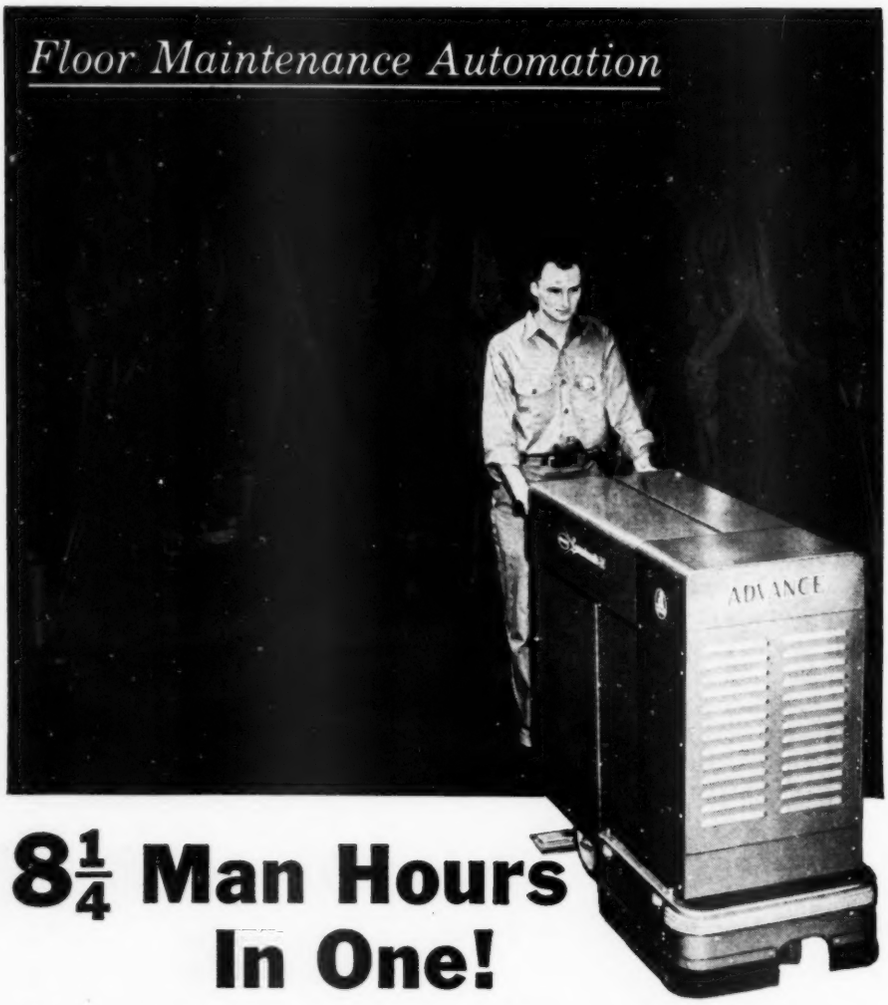
This arrangement allows us to show films in classrooms flooded with light. Shades, draperies or venetian blinds are unnecessary. Moreover, since the rear projection table has four-inch casters, it can be rolled from class to class. The net result has been to provide each of 17 classrooms with film equipment

OF PORTABLE EQUIPMENT . . .

IN LIGHTED CLASSROOMS . . .

Responsible youngsters assist A-V director in preparing materials for class. They thread projector, set up rear projection unit, roll table to class between periods. To show film, teacher just flicks switch without darkening room.

Floor Maintenance Automation



8¼ Man Hours In One!

The new Advance "Convertamatic" scrubs and vacuums 12,500 square feet of floor an hour—over eight times the area one man can clean with 19" floor machine and vac!

Here's a one-man floor cleaning gang that operates at a finger's touch. In one pass it lays solution, scrubs, vacuums and dries. Or, also in one pass, it dry-polishes and vacuums. Goes forward or back—from slowest walk to a near trot. It turns on a dime . . . operates on pennies . . . and saves dollars and dollars of costly labor. Call or write for full details today!

- Gasoline, propane, electric and battery models available.
- Fully variable speeds, forward or reverse.
- Brush pressures can be varied from 0-160 lbs.
- Double-bladed suction squeegee dries floors 50% faster.
- Exclusive "Powerflo" drive—no clutch, no differential.
- Twin brushes cut big 24" swath.
- 12 gal. solution tank.
- Choice of 12 or 16 gal. recovery tank.
- Lease and Finance Plans available.

Why walk when you can ride? Optional sulky attachment takes the fatigue out of floor care . . . increases efficiency and output.

ADVANCE

ADVANCE FLOOR MACHINE
104 Industrial Center
Spring Park, Minn.

Yes, I'd like full details on the Convertamatic. I understand there is no obligation.

Name.....

Address.....

City.....State.....

(Circle number 700 for more information)

for a price less than that of darkening just one classroom.

Even though both machines are mounted on the table, they can be removed and used independently. Thus, we use the projector to show films in the auditorium, and we employ the rear projection unit with a filmstrip "controlled reader" for kindergarten classes.

When a teacher requests both the projector and rear projection unit for a class film, the audio-visual director has everything arranged in advance. He has trained a "staff" of responsible 7th- and 8th-grade boys to help.

From his list of confirmed reservations, the director knows when the equipment is needed. In the period immediately before a showing, a boy threads the projector, rolls the table to the room, places it in the front of the room, and inserts the plug. When the teacher is ready for the filmed portion of the lesson, she just flicks the switch. At no time does a teacher have to set up the projector. Later, the boys return, remove the equipment, and prepare it for another class.

Teachers report that this results in a great saving in their time, since they neither darken the room nor set up the equipment. In fact, many teachers now prefer showing films in a lighted room. They say that students can take notes or see cues. And, since a teacher can see the entire class clearly from the front of the room, normal discipline is maintained.

A final advantage is that teacher-student educational rapport is not replaced by the social-hour feeling which often accompanies the movement of student groups to a darkened room or auditorium.

In the beginning, we weren't sure that teachers and students would care for the small rear-projection screen. However, since everyone is accustomed to viewing 24-inch TV sets, the unit's 30-inch screen strikes classes as being large, not small.

As for myself, this method of showing films has three practical considerations: First, it enabled us to put a film program into effect immediately without waiting for a budget increase. Second, it works. And third, it has won teacher cooperation—vital to the success of any program. **End**

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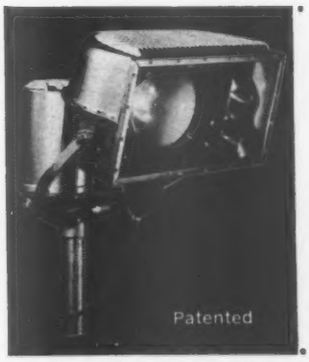

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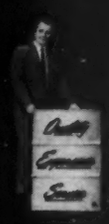

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A monthly review of ideas, new products and helpful hints

HOW CHILDREN GET TO SCHOOL SAFELY

Safety is a class project for first-grade pupils in the Heather Downs School, Toledo, Ohio.

In lessons and games the youngsters are taught their home telephone numbers, street addresses, and the safest routes to follow in their daily trips to and from school. Map-reading is part of the training.

First-grade teacher Mrs. Dorcas Lingel prepared an oversized wall map of the school's vicinity, and children make matchbox models of their homes, which are pasted to the map (see photo). Each home is keyed with a child's name. The youngsters can trace the shortest (and safest) routes from their homes to the school, and Mrs. Lingel says the map keeps the children from meandering all over the neighborhood. They learn street names, too.

As you would expect, the school's safety record is spotless.

PHOTO COURTESY THE BLADE, TOLEDO, OHIO

SCHOLARSHIP EARNS MORE THAN ATHLETICS FOR SCHOOL LETTERS

Traditionally, students who participate in athletics and other extracurricular activities win "recognition" with school letters and emblems. In recent years, some schools have been awarding letters to scholars, too.

In Medinah, Ill., scholars get this recognition with a significant difference—they merit more toward earning their letters. Lake Park High School awards letters on a point system. A top scholar gets 50 points; a good scholar gets 40 points; and a mere scholar gets only 30 points. The interesting thing is that athletes get just 12 points for each sport. A science club member gets six.

When more than the required number of points has been earned, bars or pins are added to the letters. All the letters, bars or pins are identical when awarded. After his junior year, a student may add a standard embroidered symbol to a letter if he wishes.

The award system is based upon the belief that every individual is capable of some worthwhile activity, and that every person possesses at least one quality which can help him to be successful. The importance of an activity is judged by the requirements of the school's program and the opportunity it affords for developing responsibility and leadership.

text continued on page 128

DATA PROCESSING IN MEMPHIS BEGINS WITH TEACHERS

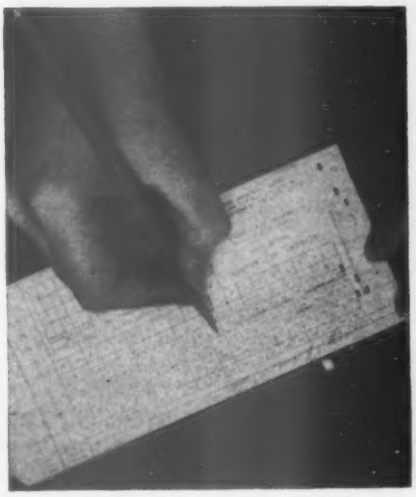
In Memphis, Tenn., schoolmen estimate they are saving about 27,000 man-hours every month by using a data processing system that begins with teachers, not school clerks.

The system, developed by IBM, utilizes cards which are marked by teachers with special pencils. Machines are sensitive to the pencil marks and use them as a guide to punch the cards.

For example, if the cards are being used to record attendance (see photo), when a student is absent the teacher just fills in a blank spot for the appropriate day with a special "mark-sense" pencil. Each child has a card. The teacher retains her "deck" until the end of the month, when she forwards it to the central office. Master records are compiled on the data processing machines there.

School authorities in Memphis have been able to do away with time consuming manual attendance recording, and still get an up-to-date report of city-wide attendance each month.

For more information, circle number 891 on the Reader Service Card.



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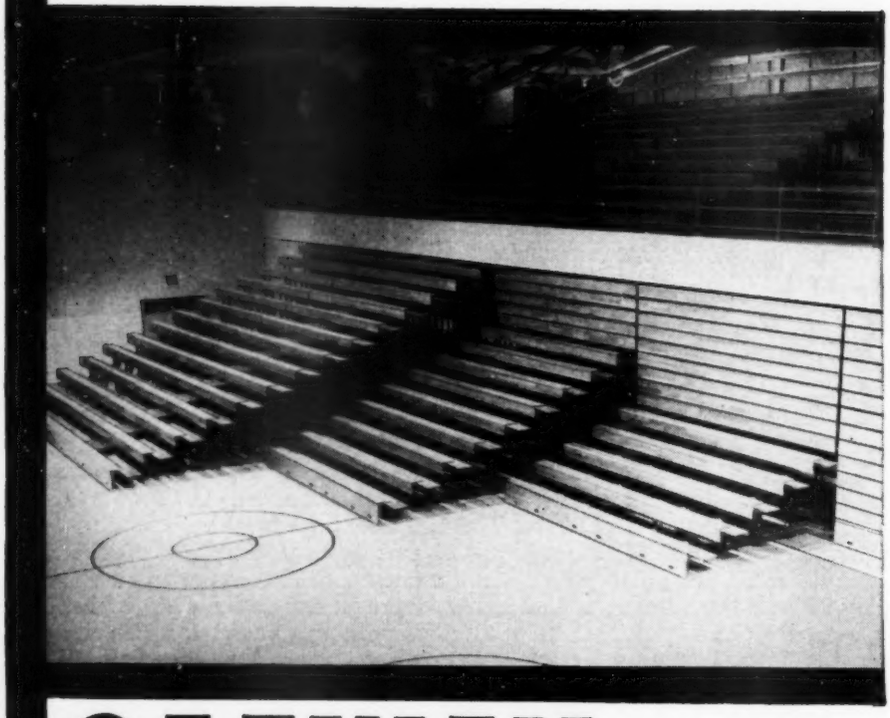

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(Circle number 781 for more information)

'CHAIN GANGS' GONE; PUPIL CONDUCT STILL BEYOND REPROACH

For administrative reasons, a class of students should be handled as a group, say schoolmen in Weston, Mass., but there are many situations in which regimented group activity can be eliminated.

Junior high principal Philip H. Wye reports that students in his school do not travel as supervised groups on field trips. They follow no prescribed pattern for going to or leaving assembly programs, and they are not supervised by teachers or student council representatives in the corridors.

"We've done away with 'chain gangs,'" says Wye, "because we have found that the more responsibility we thrust upon a student, the better he handles it. We don't tell him where or with whom to sit, or that he must leave the auditorium in a row. On field trips, students are allowed to move around in complete freedom. We even tell them to go home if they wish.

"So far, there's been only one wanderer. A student was five minutes late for a class following a field trip because he saw a large toad."

Wye says the only times students are held to group procedure is when they are being drilled for fire and other emergencies.

PARENTS RESPONSIBLE FOR STUDENT TRUANCY

In Alma, Neb., Superintendent Wayne M. Paxson believes that parents—not schools—should be responsible for students' truancy.

Early this year Paxson sent a mimeographed notice to parents informing them of a change in policy. Students no longer bring written excuses to school after an absence. Parents simply telephone the school office with an excuse, and if no such excuse is received within an hour after roll call, the parent is called and told that his child is not in school that day. That's the only action the school takes.

Not only written excuses, but admit slips have also been discontinued. No distinction is made between an "excused" and "unexcused" absence.

"Under this plan," says Paxson, "I'm sure we have no more absences than before, perhaps less. A good deal of administrative work has been eliminated, too."

Mr. Edward Moyer
Superintendent of Schools
West Hempstead, N. Y.

"Mr. Edward Moyer says, after using The Reading Laboratory Inc.'s DR Skill File."

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Mrs. Vachio comments

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Mrs. Rose Vachio, Reading Instructor
West Hempstead, N. Y. School System

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Hire an architect

continued from page 68

down into three areas: the number of registered architects in the firm, the number of licensed engineers and the number of consultants. It's almost unbelievable that when a project as large as this comes along, there aren't going to be some conferences back and forth between the various architects. The more architects and other experts, the more thinking is likely to go into the project.

LARSON: The reason we give credit for experience is obvious, but you'll notice that the point scale gives more credit for secondary schools than elementary. That's because we were going to build a junior-senior high. For an elementary school, we would have reversed the emphasis and given more credit for elementary schools completed.

Q. And what about the man who works alone?

LARSON: Scoring low on any one factor wouldn't necessarily throw a person or firm out of contention, if he's strong enough on other factors. After all, that's the justification for the whole point system. Take the matter of school building experience, for example. The architect who's had none scores low, but he may be well equipped to handle projects such as this if he has a large staff, and is favorably located.

FITCH: Incidentally, notice that if any person or firm has extensive industrial experience, he gets a bonus credit on our point system.

Q. Why did you bother to put the brochures and other promotional materials on the point scale?

FITCH: As you can see, we don't give them much credit. But we did feel that we should give the architect or firm some points for going to the trouble of preparing the materials. It indicates an interest in our project, and it represents an investment of time. True, it's subjective, but it is one of the few subjective elements in the scale.

Q. What happened after you assigned points to the architects?

FITCH: We started to interview. By this time we had collected quite

a bit of information on every architect. All the architects who scored above a cut-off level on the point scale were asked to come in and make presentations before the board. The board members were briefed before each interview, which lasted about two hours. The first portion of an interview was devoted to the architect's presentation. Afterwards, the board queried the architect on any topic pertaining to the project.

LARSON: As another aid, the board members were each given a page of questions to ask themselves during the interviews. These "questions" were to get their impressions. For example, "Is this architect sincerely interested in this project or is he merely trying to get another job?" "Is his philosophy in keeping with that of the board?" As an architect made his presentation, the board members put their notes on the page and, at the bottom, summarized their opinions. "Should the architect be considered at all, should he be eliminated, or is he a finalist?"

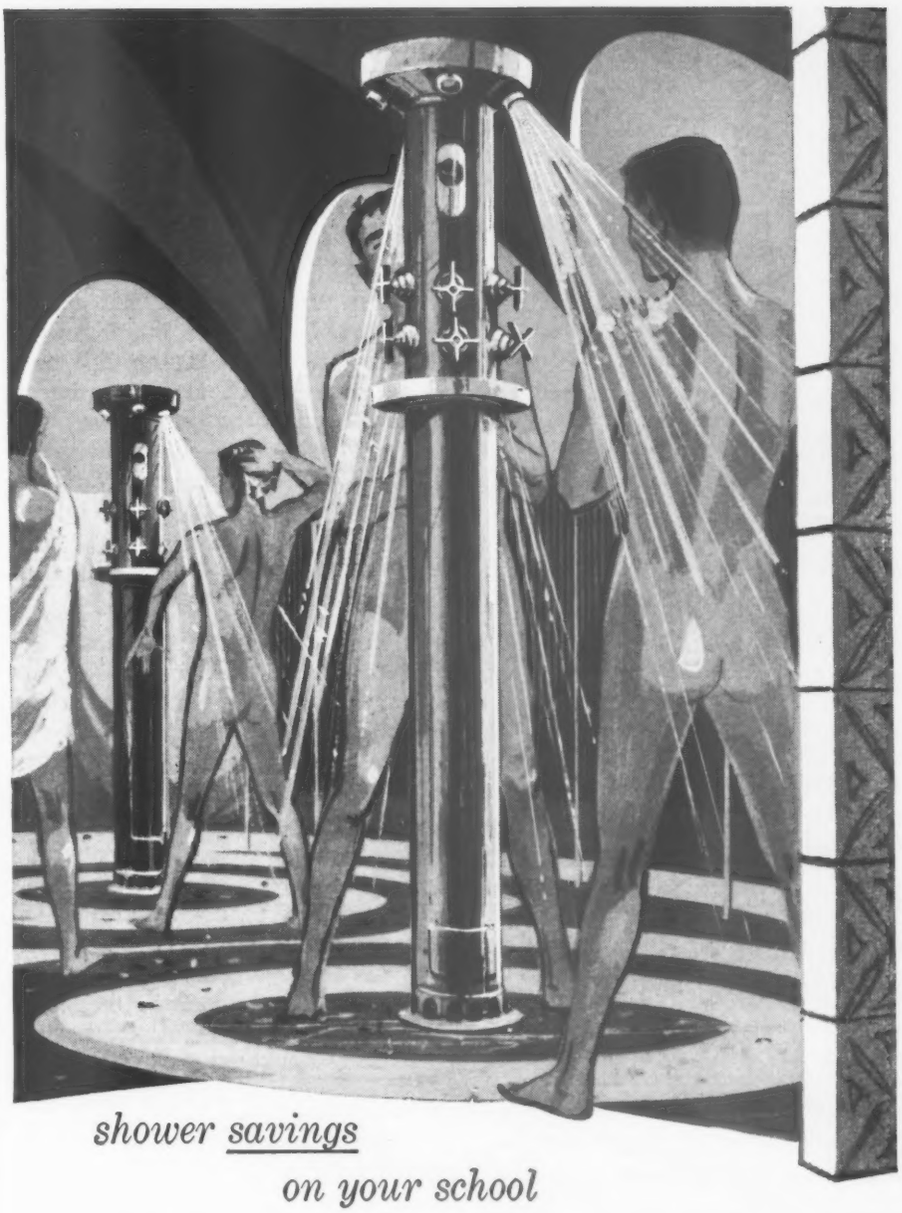
Q. Did you have a lay building committee take part in the interviews?

FITCH: Not officially, but the committee was present. Since no one person conducted the interviews and all questioning was open, they had the opportunity to participate.

Q. What did you do when an architect's presentation and impression were not as good as his score on the point scale? Which did you count more?

LARSON: This actually happened. In one case, there was a terrific interview after a mediocre point score. The result was that in the latter part of the interview, our questioning became sharper and more pointed. That particular architect had an opportunity to improve his relative position. We got good answers and revised our thinking a bit. In cases where the point score was high and the presentation was disappointing, the architect was eliminated. That's the purpose of interviews.

FITCH: One of the important things in considering an architect is that he will play a vital public relations role. When the chips are down, an architect who cannot



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make a presentation before the board certainly isn't going to do any better before the public.

Q. What about the "salesman," the architect who sells his personality at an interview, rather than his ability, creative talent and resources?

FITCH: We felt that the architect's personality was important to a good working relationship, but remember, he wouldn't have been interviewed in the first place if he didn't have these other qualities. That's why we invited only the top architects "on paper" to an interview. We didn't want to get involved with people who had nothing to sell but themselves.

Q. You started with the names of 35 architects. How many did you have left in contention at this point?

LARSON: Of the original names, about a dozen eliminated themselves for various reasons. That left about 23 to be rated on the point scale. Nine of these 23 rated high enough to be called in for presentations and interviews. Four of the nine were eliminated after we completed the interviewing. All of the five were good architects, and any one could have done the job we wanted.

Q. But you had five, and you needed one. How did you make the choice?

FITCH: We visited schools that these five architects had designed. This is where our citizens' building committee was most helpful. The board and the building committee examined the basic designs, the type of construction, etc., just to find out if they liked the architect's work. Did the architect put the vocational shops next to the library, for example. That's absurd, but it's been known to occur.

Q. How much do laymen know about architecture?

LARSON: You'd be surprised. A community has many resources in its residents—construction and engineering people, people who are familiar with building trades. Why shouldn't these resources be utilized? We found our committee very helpful.

FITCH: It isn't only a question of the lay committee inspecting a

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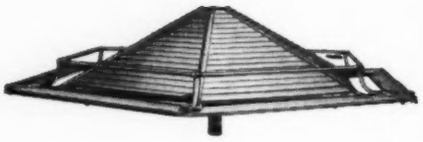
he loves little people like me! he makes slides and swings and see-saws and all kinds of things. they're real strong and they're very safe. if you're going to buy playground things you better talk to my grandfather or my father first. they're both named mr. burke."



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school, but once these people are in on school affairs, there's a built-in liaison with the public. Our committee knew what the status of our proposed school was, they knew why certain things were being done a certain way, and they interpreted the board's actions to the public. Believe me, it helped.

Q. Did the lay committee have any authority in the final choice of your architect?

FITCH: No authority per se, but its findings and recommendations to the board did have a lot of influence. The committee called our attention to many construction and planning details peculiar to certain of the architects. Since we didn't particularly care for some of these details, you could say that the committee enabled us to reduce our list of "eligibles" to three.

Q. How did you pick one from among those three?

LARSON: We called them back for more interviews. Having seen their buildings, the board, primed by the lay committee, had some more specific questions. "Why did you use fluorescent lighting in that school?" "Why is the cafeteria partitioned?" Also, at these three interviews, the board began discussing contractual relationships.

Q. Could any member of the board have vetoed one of these three architects?

FITCH: Yes, but it didn't happen that way. After the three interviews, we arrived at our decision by informal discussion. There was no poll taken; everything just seemed to fall into place and we chose one.

Q. Did you pick the right architect for this school?

FITCH: You bet. We had our disagreements and discussions, but we always found solutions acceptable to everyone. The working relationship has been more than wonderful.

Q. The architects didn't object to going through the complex selection procedure, only to see someone else win the job?

LARSON: Anyone who is competing with others for a prize will recognize that only one person grabs the ring. **End**

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continued from page 12

folder lists capacities, dimensions of all the stands, and gives complete architectural specifications.

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Using your feet. Three types of floor mounted pedal valves are described in a catalog of automatic water service systems for schools, distributed by the T & S Brass and Bronze Works, Inc. Pedal valves, according to the catalog, are especially helpful in laboratories and cafeteria kitchens, and for use with water fountains and custodial sinks and tubs. Some other pedal valves described in this catalog include wall mounted and deck mounted units, double and single units, and mixer units for hot and cold water. Some nozzles and spray tips for use with the pedal systems are also described.

For a free copy, circle number 876 on the Reader Service Card.

Build your own organ. Here's a shop project developed by Electronic Organ Arts. The company is distributing a folder which explains how vocational shops can build a full-size concert organ.

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How to buy electric tools. If you're thinking of equipping vocational shops, or if you're buying electric tools for your maintenance personnel, you will get some help from this buying guide published by the Porter-Cable Machine Co. The 34-page guide describes more than 70 portable electric tools for many uses. Information includes specifications of tools plus their accessories. Illustrated.

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Refrigeration equipment and tables. A 16-page illustrated brochure, by McQuay, Inc., gives complete tables and specifications of commercial refrigeration equipment. The booklet lists capacities and accessories of all equipment, and has temperature and capacity tables for coolers, freezers and hardening rooms.

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E. #1200. Folding arm chair; Samsontex vinyl-upholstered, in Contract Brown, Counterpoint Grey, Counterpoint Tan, Counterpoint White, Gala Blue.

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For church, school, club, other group seating information, see your Yellow Pages or write: Shwayder Bros., Institutional Seating Div., Dept. SM91, Detroit 29, Mich.

Samsonite
FOLDING and STACKING CHAIRS

(Circle number 747 for more information)

Waste Mobile
CHROME PLATED!
A W-M Exclusive

IMPROVED FEATURES
- One-piece steel lock-bracket
- Heavy duty riveted 2-way hooks

ALL PARTS UNCONDITIONALLY GUARANTEED

The new Waste Mobile in gleaming, easy-to-clean chrome introduces real efficiency in modern maintenance. Facilitates clean-up by speeding collection of wet and dry waste, soiled linen, packages, mail.

ACCESSORIES FOR WASTE MOBILE

W-M CADDY—sturdy fabric carrier with ten roomy pockets for maintenance supplies. Converts Waste Mobile into janitor cart.

W-M BAGS—choice of blue denim, white duck, and grey plastic in 4 or 6-bushel size.

write for literature today!
walton-march
Highland Park, Illinois

(Circle number 756 for more information)

(and time and money spent), and an address and telephone number card.

For more information, circle number 889 on the Reader Service Card.

■ ■ ■

Two-track class recorder

Simplicity of operation is the feature of a multiple recorder introduced by Roberts Electronics, Inc. All controls are in the front, easily accessible and identifiable.

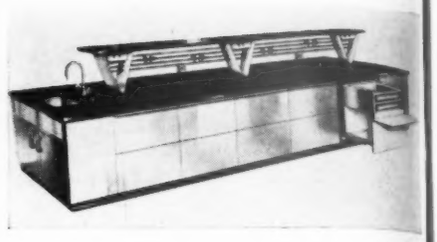
The recorder can be used in language studies, dramatics, public speaking and music courses, since it records on sound, or sound with sound. Two recording tracks can be used and played back simultaneously or individually. Erasure and re-recording of the second track can be done repetitiously without erasure or distortion of the basic track.

For more information, circle number 846 on the Reader Service Card.

■ ■ ■

Functional lab tables

Hidden corners of conventional drawers and cupboards have been eliminated in a series of laboratory



tables being introduced by the Metalab Equipment Co. Roll-out plastic trays and shelves enable students to use every bit of available space for storage.

The laboratory tables can be used along walls or in the center of a room, since they are portable and glide on concealed rollers. In addition, exposed surface piping is integrated into the basic design of the furniture while retaining full operational and maintenance features.

For more information, circle number 883 on the Reader Service Card.

■ ■ ■

Stops masonry leaks

Mixed with cement, a liquid formula manufactured by the Stonhard Co. stops water leaks and seepage from masonry-lined pools, tanks, tunnels and walls. It dries rapidly and adheres with a tight bond, even against a leaking surface.

The material can also be used as a plaster coating. Repairs can be made without previous experience or special skill.

For more information, circle number 894 on the Reader Service Card.

■ ■ ■

Pointer for films

Interesting highlights in slide and film lectures can be pinpointed with this flashlight pointer manufactured by the Edmund Scientific Co.

A bright, sharply visible arrow is directed from a cone on the flashlight.

For more information, circle number 887 on the Reader Service Card.

■ ■ ■

Electric food cart

Food can be prepared hours in advance of serving time and stored in a mobile hot and cold cart manufactured by the National Cornice Works, then transported to the serving area in the same cart.

The cart also functions as a reserve food supply and service facility in the serving area. Top covers unfold and become full shelves.

Separate thermostats control the hot and cold sections of the unit.

The manufacturer says the unit will

Adult and Premium Seating

WITH . . .

EZ-A-WAY

Backrest

FOLDING
BLEACHERS

Correct posture, comfortable, convenient are these EZ-A-WAY Folding Bleachers, described in more detail in the paragraphs to the right. Easily folded away, or prepared for occupancy, here is adult premium seating . . . opera style when seats and backs are padded.

Like all EZ-A-WAY Folding Bleachers the Johnson City installation has the Berlin original construction features that have made them the preferred folding bleachers for gymnasiums everywhere.

- AVAILABLE - 30 & 32" back-to-back and 9, 10, or 11½" rise . . . with or without backs or pads
- BACKRESTS - are supported with strong "Aircraft" aluminum brackets . . . light weight for easy operation..
- PADS - for seats and backs are available in any color of cloth backed Vinyl fabric over foam rubber pads.
- OMEGA ELECTRIC DRIVE - for continuous automatic push button operation.

WRITE for complete details of this type of seating . . . and engineering data for your gymnasium seating requirements.

BERLIN CHAPMAN CO.
BERLIN, WISCONSIN

BERLIN
SEATING ENGINEERS
BERLIN CHAPMAN CO.
Berlin, Wisconsin U.S.A.

(Circle number 708 for more information)

handle up to 600 children's meals in one load.

For more information, circle number 838 on the Reader Service Card.

■ ■ ■

Pages personnel quickly

Fast, automatic paging of persons throughout a school or office becomes a simple matter with this system introduced by the Edwards Co., Inc.

The system operates simply. Each person frequently paged is assigned a code number on a master board. The device, when operated, sends coded impulses or combinations of impulses to many stations simultaneously. Since every person assigned to the system knows his "personal" code, he then calls in. Because paging is coded, privacy is assured—and electronic interlock prevents a scrambling of the code.

For more information, circle number 866 on the Reader Service Card.

■ ■ ■

Bacteria experiment kits

Six teaching kits for classroom experiments in the fundamentals of bacteriology are being introduced by Science Education Products, Inc.

The kits can be used by students in the fifth through 10th grades. Instructors' manuals are available to help teachers program the experiments, and the manuals also outline procedures and suggest additional activities.

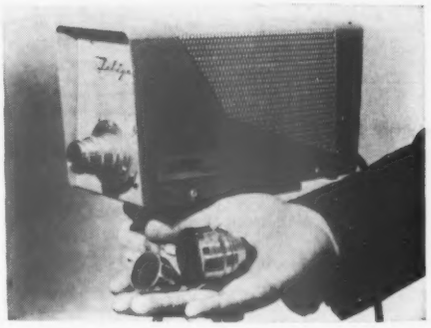
For more information, circle number 856 on the Reader Service Card.

■ ■ ■

Miniature TV camera

High definition, miniature, closed-circuit television cameras are now being marketed by the Allen B. Du Mont Laboratories, Inc.

According to the manufacturer, the camera can use regular, large television receivers as monitors. As a result, and because the camera itself is sim-



This is Haws wall-mounted Model 7300, in cast aluminum—handsomely styled to complement lab and shop; ideal for new construction

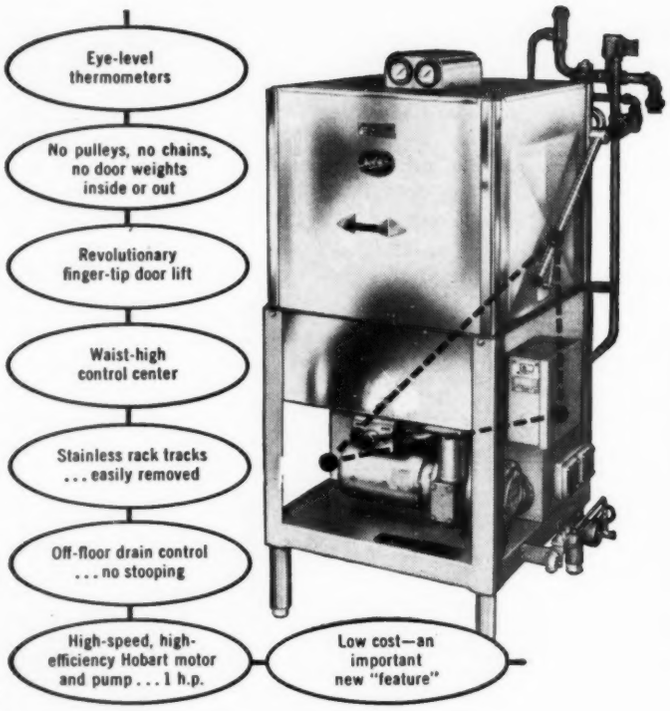
Haws EMERGENCY Eye-Wash provides instant first aid to prevent serious injury due to eye contamination

... by saving those vital seconds that can mean the difference between temporary irritation and permanent injury. Controlled streams flood the eyes, washing away searing chemicals and other foreign matter. See this model and others, as well as emergency drench showers, detailed in the Haws Safety Equipment Catalog. Write today to Haws Drinking Faucet Company, 1443 Fourth Street, Berkeley 10, California.

HAWS EYE-WASH FOUNTAINS

Since 1909 designers and manufacturers of drinking fountains and water coolers

(Circle number 772 for more information)


Eye-level thermometers
No pulleys, no chains, no door weights inside or out
Revolutionary finger-tip door lift
Waist-high control center
Stainless rack tracks ... easily removed
Off-floor drain control ... no stooping
High-speed, high-efficiency Hobart motor and pump ... 1 h.p.
Low cost—an important new "feature"

New!

Hobart AM series dishwashers with the TimeSaver Triangle

More features than ever before in a new, economical commercial dishwasher. And all controls are closely grouped in a unique *TimeSaver Triangle*, so operation is faster, easier, more efficient than ever before.

Learn all the new features and benefits of this new series of AM dishwashers (all the time-tested performance features are still there, too). And get the biggest surprise of all—low in original cost and low in ultimate cost, too. Available for straight-through or corner installation. Write for free Facts Folder today.

Nationwide Factory-Trained Sales and Service ... over 200 offices

Hobart® machines

A Complete Line by the World's Oldest and Largest Manufacturer of Computing Scales, and Food Store, Bakery, Kitchen and Dishwashing Machines

The Hobart Manufacturing Co.
Dept. 309, Troy, Ohio

Gentlemen: I want the Facts Folder on the new Hobart AM Series dishwashers with the TimeSaver Triangle.

Name .....

Business Name .....

Address .....

City ..... *Zone* ..... *State* .....

(Circle number 774 for more information)

ple to operate, it can become a valuable accessory for such uses as security surveillance, visual teaching aids, enlarging microscope displays, etc.

The camera is available in several versions and with several lenses.

For more information, circle number 884 on the Reader Service Card.

■ ■ ■

Projector stays cool

Due to the coolness of its operation, this overhead projector manufactured by the Buhl Optical Co. will hold projection transparencies for unlimited

periods without loss of their quality due to heat.

The projector weighs 40 pounds and will accommodate transparencies up to 10 inches by 10 inches. It also holds cellophane rolls which can be used for the projection of handwritten notes.

For more information, circle number 892 on the Reader Service Card.

■ ■ ■

Rainy day runners

Rolls of disposable crepe paper, produced by the B. H. Jordan Co., are excellent for absorbing water in halls and vestibules on rainy days. This scuff-resistant paper is tinted a soft neutral shade of green and comes in rolls 1,000 feet long, 19½ inches wide.

For more information, circle number 862 on the Reader Service Card.

■ ■ ■

Lettering kit

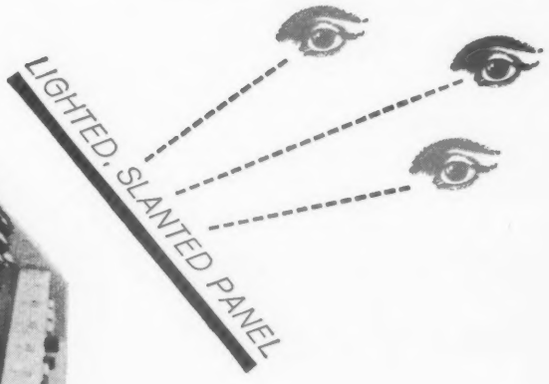
Re-usable plastic adhesive letters and symbols make it easy to letter names and titles on office doors. Kits

FOR THE **INVARIABLE** BEST

ALWAYS SPECIFY

NEWCOMB

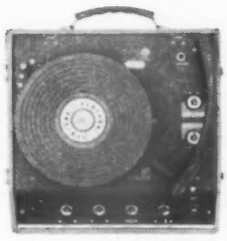
QUALITY AUDIO PRODUCTS



If you've ever tried to operate a player with controls mounted horizontally on the motor board, you know how awkward this can be. All Newcomb Series R, AV, and TR portable transcription player/public address systems have controls strategically slanted so they are completely visible and convenient to operate from any position, seated or standing. In addition, panels are well-lighted for use in a darkened auditorium or lecture hall.

HEAVY MOTOR BOARD

Light weight motor boards increase rumble noise, and they don't have the strength necessary to withstand shipping abuse. Motor boards on Newcomb players are made of # 18 gauge steel and are well-braced to insure stiffness and strength... one of the many details which make Newcomb products sound better, last longer.



ACOUSTICAL FILTER TONE ARM MOUNT

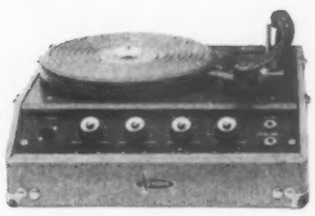
If the tone arm is mounted directly to the motor board, rumble and motor noise that cause amplitude flutter is transmitted directly to the pickup. Tone arms on all Newcomb R, AV, and TR players are insulated from the motor board by a resilient mounting — an essential feature when reproducing stereo records.

Add these features to the multitude of thoughtful design details which distinguish Newcomb equipment ...Add them to Newcomb's long-term reliability — proven by your own service records... and to the easy serviceability, and the ready availability of Newcomb's made-in-the-U.S.A. parts... Equate years of service with initial investment, and you are sure to...

ACCEPT NO SUBSTITUTE

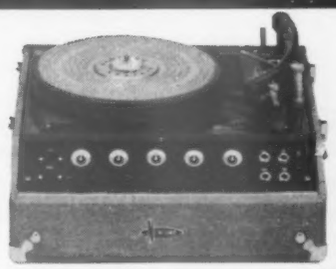
NEWCOMB R-164V

...a medium cost, medium power, 4-speed variable-speed, transformer-powered player has lighted, slanted operating panel, separate phono and mike mixing controls, separate tone controls.



NEWCOMB AV-1612V

...a deluxe, medium power, 4-speed, variable-speed, transformer-powered player has lighted, slanted operating panel, deep-ribbed rubber mat, voice filter, scratch-filter, neon strobe.



NEWCOMB AVS-1624V STEREO

...a deluxe, 24 watt, transformer-powered player with lighted, slanted operating panel, provides stereo or mono record reproduction at flip of switch, has stereo mike and tape inputs, and blend control.

Write for complete information; please specify type and size of players in which you are most interested.

NEWCOMB AUDIO PRODUCTS CO., Dept. M-9, 6824 Lexington Avenue, Hollywood 38, California.

(Circle number 786 for more information)

are available in a variety of type styles, sizes and colors from the General Aniline and Film Corp. Letters can also be used in making masters for transparencies, posters and charts. They are self-adhesive.

For more information, circle number 882 on the Reader Service Card.

■ ■ ■

No-buff floor finish

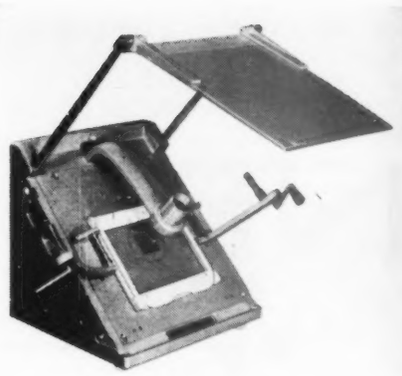
A floor finish which contains no wax is said to eliminate buffing and cover 50% more floor area than similar amounts of other finishes. Manufactured by the Industrial Chemical Div., of Leo Silfen, Inc., the compound is nonflammable and makes floors slip-resistant. It is maintained by damp mopping.

For more information, circle number 847 on the Reader Service Card.

■ ■ ■

Microfilm reader

Table-top reading and wall projection of all types of microfilm can be accomplished on one unit manufactured by Audio-Visual Research, Inc. According to the manufacturer, it is a practical tool for school libraries.



The unit is portable, and has telescoping arms which support a mirror for projecting the image onto a desk or wall screen. It can be used in a lighted room with a viewing hood.

For more information, circle number 890 on the Reader Service Card.

■ ■ ■

Tray support for mixer

A strong steel shelf, mounted on a vertically adjustable, telescopic leg, can be attached to food mixers and used as a portable counter. The shelf holds pans, trays and other containers receiving processed foods from mixer attachments. It can be used with either bench model or floor model machines.

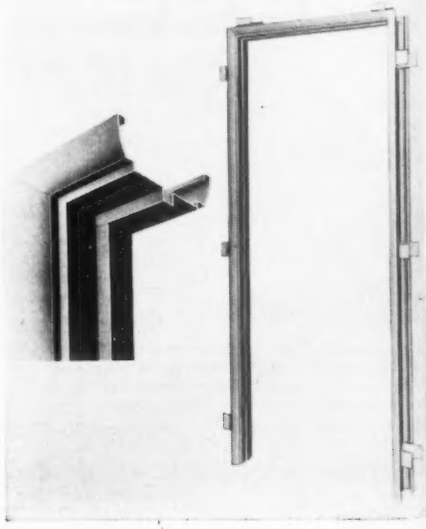
The shelf area measures 13½ inches by 20½ inches, and the unit is available in galvanized or stainless steel.

For more information, circle number 901 on the Reader Service Card.

■ ■ ■

Economical door frame

A door frame of steel, manufactured by the Truscon Div. of Republic Steel Corp., is said to save money in constructing new buildings because 1) it can be installed after drywall has been put in place; 2) there is no hinge and strike mortising; 3) there is no



SAVE COSTS! SAVE MAINTENANCE! SAVE SPACE!

STANDARDIZE with Mitchell FOLD·O·LEG tables

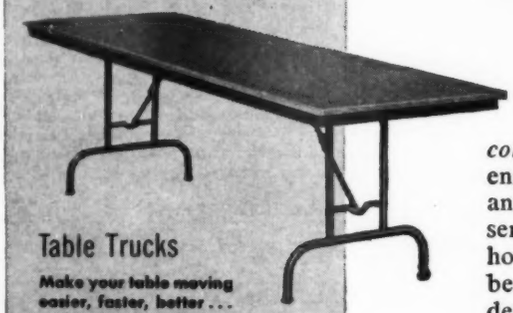


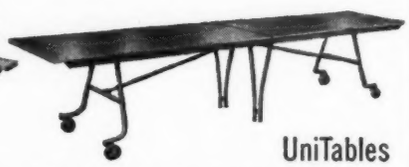
Table Trucks

Make your table moving easier, faster, better . . . and save time, labor, and money doing it.

Fill your *every* need for efficiency, comfort and economy from Mitchell's *complete* selection of quality-engineered tables, stands, risers and stages. Your Mitchell representative will be glad to show how you and your budget will be ahead. Send coupon for detailed information.

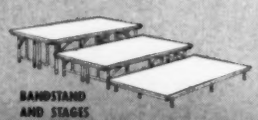
PorTables

Get versatility and utility with Mitchell's smooth-sure action in this "Fold and Roll" table and bench set . . . at your finger-tip command.

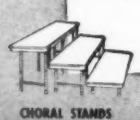


UniTables

Reduce change-over time from minutes to moments with this ingenious Mitchell "Fold and Roll" table. Ruggedly constructed for maximum durability.

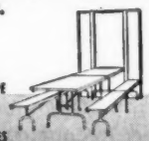


BANDSTAND AND STAGES



CHORAL STANDS

SEATING RISERS



WALL TYPE DOUBLER TABLES & BENCHES

MITCHELL MANUFACTURING COMPANY
2750 South 34th Street • Milwaukee 46, Wisconsin

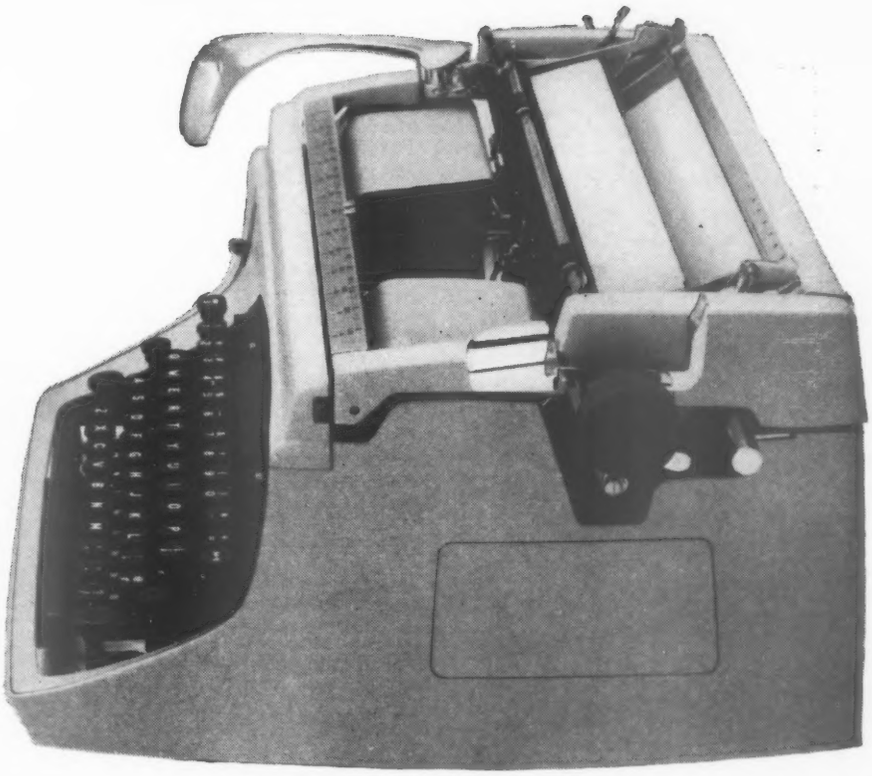
Send illustrated brochure on Mitchell Products as indicated.

☐ Mitchell Tables, Trucks
☐ Mitchell Stands, Stages, Risers
☐ Mitchell UniTables
☐ Mitchell Doublers
☐ Mitchell PorTables
☐ Have Mitchell representative contact us.

NAME ..... TITLE .....
SCHOOL .....
ADDRESS .....
CITY ..... ZONE ..... STATE .....

(Circle number 735 for more information)

underwood



Here are five reasons why the new Underwood TOUCH-MASTER FIVE is ideal for classroom use:

1 Rugged construction (to withstand rough classroom use)
2 Exceptional lightness of touch (students make quick adjustment to electric machines when entering business offices)
3 Exceptionally light, fast carriage return
4 Instantly responsive touch tabulation
5 Paper centering, title-heading centering and aligning scales and balanced margin indicators

To get all the facts about the new Underwood "Five," fill out and mail this coupon.

TOUCH-MASTER FIVE

Underwood Corporation, Education Department,
One Park Avenue, New York 16, N. Y.

Please send me literature on the new Underwood standard and electric typewriters, and my free copy of the newly revised "History of the Typewriter," without obligation.

Name . . . . . Position . . . . . .

School . . . . . .

Address . . . . . .

(Circle number 753 for more information)

sanding or drilling to be done in the field; and 4) the frame installs complete in a matter of minutes.

The frames are designed for use with 1⅜ inch wood or steel doors. They can be used with plaster or drywall construction.

For more information, circle number 896 on the Reader Service Card.

■ ■ ■

Table for ETV

A special table for use with classroom television monitors is being introduced by the H. Wilson Co.

The table places the receiver five feet above the floor. The top shelf slants eight degrees, which minimizes reflective glare and tilts the receiver downward so students get a better viewing angle. The shelf also has a rubber pad.

The table itself, constructed entirely of steel, is large enough to accommodate any receiver, yet small enough to pass through regular classroom doorways. It rolls on four-inch ball-bearing casters; two of the four casters have brakes.

For more information, circle number 868 on the Reader Service Card.

Recorder fits in pocket

Designed for dictating letters or making on-the-spot notes, this miniature tape recorder will fit into a pocket or purse and operate in any position—even while you are walking.

The recorder is manufactured by Craig Panorama, Inc., and is powered by small batteries. It is transistorized, and has two speeds and a convenient

meter for checking recording level and condition of the batteries. Standard equipment includes a microphone and case, reel case and earphones. Some accessories are a foot switch, telephone pickup and an adapter for using AC current.

For more information, circle number 886 on the Reader Service Card.

■ ■ ■

Marble patterns on panels

A series of six marble patterns on its plastic-surfaced paneling has been introduced by Marsh Wall Products, Inc. The new designs are reproductions of authentic marbles and are adaptable to any architectural treatment or theme. The paneling itself is resistant to heat and moisture, can be cleaned quickly with a damp cloth, and comes in two sizes—four by six feet and four by eight feet.

For more information, circle number 845 on the Reader Service Card.

■ ■ ■

Chair relieves discomfort

Long hours behind a desk can be uncomfortable and tiring, but this chair, manufactured by the Stylex Seating Co., is said to relieve discomfort and aid posture.

The chair can be adjusted, back and seat tilting together. The seat has springs covered with latexed sisal insulation and 1¼ inches of foam rubber.

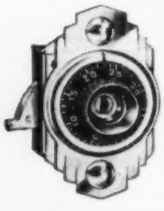
to make DUDLEYS *better* locks

Without knowing the combinations, the Dudley Master-Key will instantly open any Dudley Combination Locker Lock included in a master-keyed series.

This master-key, which cannot be duplicated on commercial key-making machines gives absolute safety control. It is virtually impossible to create such a key from the lock itself, due to its unique double slot, infinitely more difficult to reproduce than the serrated edge of the standard type key.

Any locker can be opened in an emergency on a moment's notice, yet only by an authorized person.

The Master Chart and Master-Key Controls supplied with all Dudley lock installations provide another reason why Dudley locks have been favorites among school people everywhere for over forty years.

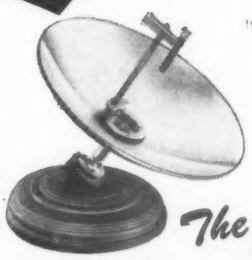


S-540
Master-Keyed Built-in Lock
Rust-resistant case with anodized aluminum escutcheon plate, fits all locker piercings. For right or left hand doors.

P-570
Master-Keyed Combination Padlock
Finest of all master-keyed padlocks. Cast aluminum case, extra heavy steel shackle. Self-locking. Rotating dial.

DUDLEY LOCK CORPORATION
1436 Old Dixie Highway, Vero Beach, Fla.
The standard of controlled locker protection since 1921
(Circle number 718 for more information)

A NEW SCIENTIFIC AID



—in teaching the principle of solar energy

The Strong

SOLAR FURNACE

Under favorable atmospheric condition, samples placed in the furnace can be subjected to temperatures in the vicinity of 3,000 degrees Fahrenheit.

Makes possible the utilization of the sun's energy in reaching the melting points of many basic elements.

Consists of a 14-inch parabolic mirror, a means of pivoting and tilting so that it is perpendicular to the sun's rays, a coarse and fine focusing device, and a sample holder, all mounted on a metal base.

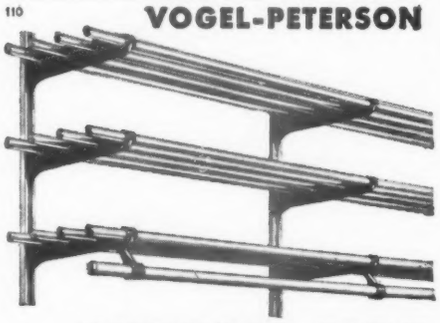
$69.50 f.o.b. Toledo

Literature on request

THE STRONG ELECTRIC CORP.
250 City Park Ave. Toledo 1, Ohio

(Circle number 751 for more information)

110 **VOGEL-PETERSON**



CUSTOM-LINE
Aluminum **HAT and COAT RACKS**

Tailored to fit any given open or closetted wall area. Smart in design and modern in "clear", "gold" deep etched anodized finishes and combinations. Quality built—closed-end aluminum tubing, rigidly held in cast aluminum brackets that are adjustable for height in dovetailed mounting extrusions. Brackets also adjustable to any desired centers.

3 BASIC SHELVES

1. Hat shelves with hanger bar for coat hangers.
2. Hat shelves with staggered cast aluminum coat hooks.
3. Hat or utility "plain" shelves for stacked tiers for general use.

Write for Bulletin CL-745

VOGEL-PETERSON CO.
Rt. 83 and Madison St. • Elmhurst, Ill.

(Circle number 783 for more information)

The back rest is made of molded plywood with 1½ inches of foam rubber. Rubber-cushioned self-leveling glides are on all legs.

For more information, circle number 877 on the Reader Service Card.

■ ■ ■

Easy to clean

These all-rubber stair treads manufactured by Melflex Products Co., are molded smooth to take much of the work out of cleaning. But there's no sacrifice in safety, says the manufacturer, because the front stepping area has a slip-resistant diamond grid pattern.

Extra long tapered lips cover the edge of stairs and make thick steps look neat and tailored. The treads are available in six marbleized colors.

For more information, circle number 864 on the Reader Service Card.

■ ■ ■

Metal lab booth

A language lab booth, featuring splinter-proof, all-metal construction with welded joints, is being marketed by the Advance Furnace Co. Divider panels are insulated with fiberglass and all wiring is concealed.

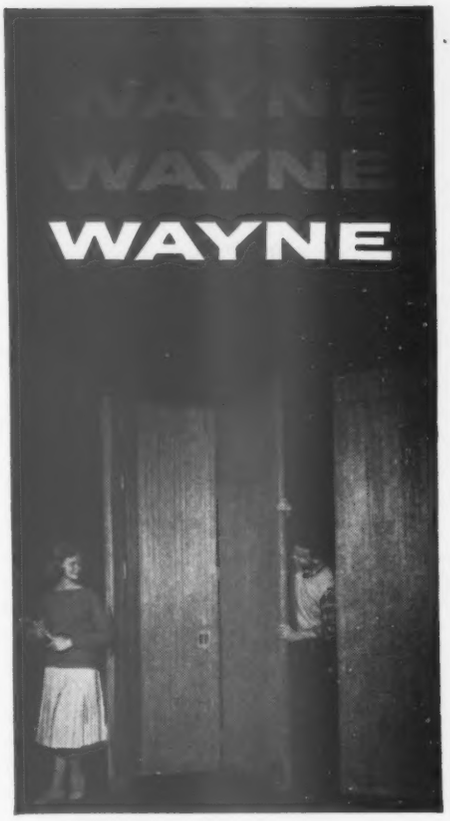
The booth, which can be equipped with a convertible top for use as a conventional writing desk, will accommodate electronic equipment of most manufacturers.

For more information, circle number 844 on the Reader Service Card.

■ ■ ■

Versatile projector

Laboratory Furniture Co., Inc. is introducing a versatile projector which operates in both horizontal and vertical positions. Vertically, instructors



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(Circle number 757 for more information)

Here's the new "compact", lightweight, low-priced floor maintenance machine designed, built and equipped to squarely meet modern need for both scrubbing and polishing small area floor surfaces.

This new Super Service Port-Able 13SP scrubs, cleans, polishes — does everything any big floor machine can do. It brings to small area duty the efficiency of the big machine at a fraction of big machine price. Anybody can use it — easily carried up and down stairs. It is so handy, easy to use, and economical of labor that many are replacing big machines with this compact unit for multiple small and congested large areas. Now available from your local Super distributor. See it. Try it.

- It shampoos rugs, carpets, scrubs and polishes floors
- Lightweight, practically indestructible solution tank made of high impact Royalite
- Complete 13" brush equipment with standard aluminum drive plates
- Self-lubricated—no grease leaks
- Power-Grip Nylon drive—no slipping, stretching belt drive, no metal-to-metal gears
- Fully adjustable handle provides operator comfort
- Light, easily handled and carried about
- Quiet — use it at all times of day or night

Solution will not spill from tank under any conditions of use or storage. Tank is completely non-corrosive!

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Please send catalog and data on the new Super Service Port-Able 13SP.

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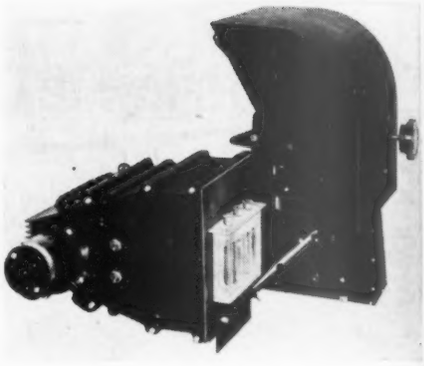
(Circle number 740 for more information)



can project contents of test tubes (*see photo*), meters, electroscopes and other science apparatus.

Horizontally, the projector converts to a standard overhead projector capable of handling five-inch by five-inch transparencies. A writing attachment is available for projecting notes and diagrams as they are written.

For more information, circle number 853 on the Reader Service Card.

■ ■ ■

Rust-inhibiting paints

A series of paints, which combine the strength and adhesion of epoxy resins with qualities of rust prevention, has been announced by the Garland Co. According to the manufacturer, a primer coat with this rust-inhibiting formula can be applied over sound but rusted metal, with a minimum of surface preparation. High-gloss finish coats of similar composition are also available.

For more information, circle number 849 on the Reader Service Card.

■ ■ ■

Lab stool fits under tables

The Ajusto Equipment Co. has developed a laboratory stool with a folding backrest, so that it can be shoved under a table when not in use, thus keeping aisles clear.

The backrest, made of tempered

BALDWIN CONCERT GRAND. The truly great piano requested by today's leading artists and symphony orchestras. Ebonized. Length 9'.

BALDWIN GRAND. Available in 5' 2", 5' 8", 6' 3" and 7' lengths. Several finishes. Same patented 41-ply laminated pinblock as in Concert Grand. Unconditional, indefinite guarantee.

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PIANOS BY BALDWIN

HAMILTON STUDIO. The Baldwin-built piano especially designed for use in schools. Full 45" studio scale. Choice of finishes.

HOWARD SPINET. The Baldwin quality-at-a-price spinet piano. Full-sized keyboard, full-power action. Several finishes available.

ACROSONIC SPINET. A piano with a spinet's compact size and the boundless tonal resources of a Baldwin. Varied styles include console models.

The superiority of Baldwin pianos over lesser instruments in quality of tone and response is subtle...but not too subtle for young people to grasp with their instinctive appreciation for beauty. This superiority is even more apparent to the world-famous artists who, because of it, use only the Baldwin for concert work.

Schools become aware of Baldwin superiority, not only through the intangible extra richness Baldwin-built pianos add to the musical phase of the educational process, but also through very practical savings on maintenance costs. The same craftsmanship that makes Baldwin-built pianos sound better and play better gives them durability too. Under the difficult conditions of school use, Baldwin quality means fewer repairs and less frequent need for tuning.

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(Circle number 707 for more information)

steel, adjusts by a single screw five inches in or out and three inches up or down. The seat may be adjusted from 18 to 26 inches in height.

For more information, circle number 859 on the Reader Service Card.

■ ■ ■

Magnetic tapes

A selection of 10 acetate or mylar-base magnetic tapes is being offered by the Rheem Califone Corp. The tapes are said to be free from distortion, have full range frequency response, and exceptional strength and durability.

The tapes were designed for use with this firm's language laboratory equipment and tape recorders.

For more information, circle number 830 on the Reader Service Card.

■ ■ ■

Roof coating reflects heat

The Superior Paint & Varnish Corp. is now marketing a roof coating that not only protects roofs from aging and deterioration, but also reflects heat and keeps buildings about 15 degrees cooler in warm weather.

The coating is a white butyl rubber alkyd compound—a weather-resistant

resin. It can be applied to built-up roofs, rolled roofing, asbestos and asphalt shingles, felt and tar roofs, cement, unglazed tile and galvanized metal roofs. It is not recommended for gravel roofs or wooden shingles.

Brushes, rollers or spray guns can be used to apply the coating.

For more information, circle number 869 on the Reader Service Card.

■ ■ ■

Protects vital records

Remington Rand Systems, a division of Sperry Rand Corp., is manufacturing an insulated filing cabinet designed to enhance a modern office while maintaining protection of vital records. The cabinet has successfully passed drop tests, explosive tests and fire tests.

The file is available with legal or letter size drawers in two, three, or four drawer file cabinets.

For more information, circle number 879 on the Reader Service Card.

■ ■ ■

Sectional floor matting

Highly grease-resistant and reversible floor matting has been developed by the American Mat Corp. The vinyl matting is said to be ideal for use in cafeterias.

Each section is six inches long by 2 5/16 inches wide. These sections are nonporous and easy to clean. Alternate rows of deep-grooved and corrugated sections are woven on rust-resistant spring steel wire to make up the floor covering.

Thirteen colors are available.

For more information, circle number 832 on the Reader Service Card.

text continued on page 148

better look again . . .

ONLY SICO'S BY-65 HAS PUSHBUTTON-REMOVABLE BENCHES

Think folding bench-table seating is pretty much "six of one and half-dozen of another?" SICO can prove it isn't so! There *is* a big difference in seating, and if you are really serious about getting full dollar value, better take a long look at that table you're thinking of buying. Then remember these six (of many) *extra features* found in SICO'S BY-65—features which no other table in the world can match:

1. The BY-65 stores in less space than any other folding table—only 4½" per unit required when nested!
2. Exclusive torsion bar folding allows ease and safety of operation. Dangerous clips, latches and springs are eliminated so that even a child can operate the BY-65.
3. Folding benches flip up to allow fast, easy, no-stoop cleaning on *both* sides! Custodial time goes way down when the benches are up out of the way for sweeping.
4. Flip up bench frames provide exclusive "wrap around" protection for the entire table during movement and storage.
5. High-impact impregnated edges require no banding. This means no hidden unsanitary substances or unpleasant odors, no snagging of clothing.
6. Pushbutton-removable benches mean just that! Push the button and the benches slide out and off. Get added value by using your tables with folding chairs for adult seating.

A COMPARISON WILL PROVE...SICO IS THE BEST BUY—ANYWHERE!

■ *SICO has a complete line of eating, seating and staging facilities for every need. Get complete information on the SICO Model BY-65 or on the full line of SICO products. Write today:*

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MANUFACTURING COMPANY, INC.
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(Circle number 748 for more information)

Now! Ice-Pak any injury in just 2 seconds!

Remarkable new discovery!
NEW KWIK-KOLD INSTANT ICE-PAK.
Gives instant cold that lasts up to ½ hour! For sprains, swelling, bruises and minor bleeding. Helps minimize injury, speed recovery.

Doctors know that prompt application of cold is one of the most important first aid treatments for injury. And *how fast* cold is applied can often make the difference between days, and even weeks, of recuperation.

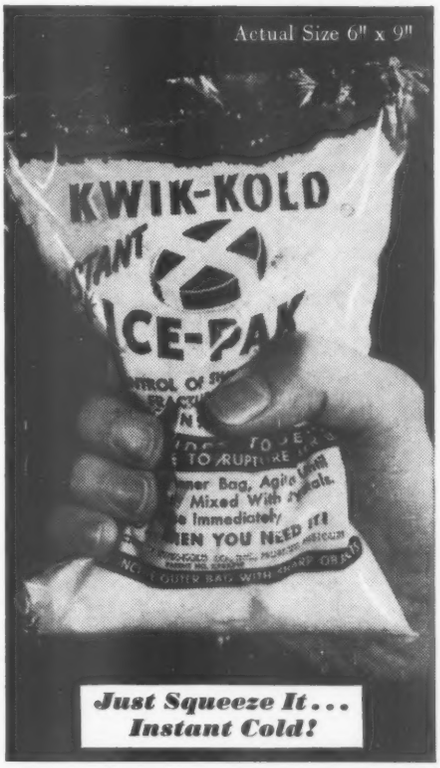
Now a new scientific discovery called KWIK-KOLD makes it possible for anyone—anywhere—to get the medical benefits of cold in a hurry!

New KWIK-KOLD Instant Ice-Pak gives you *instant cold* for any injury. Relieves pain on the spot—reduces swelling and minor bleeding. Much faster and handier to use than old-fashioned ice bags and, unlike ice, is always available, is not messy, is easy to carry on trips.

Quick and easy to apply. Just squeeze the plastic bag and—in just 2 seconds—you get instant cold that *stays cold* up to half an hour! The tough yet flexible plastic bag conforms readily to body contours. Non-toxic and safe, even if the bag is punctured. Keeps for extended periods of time.

Kwik-Kold provides ready relief for athletic injuries. Used by the 1960 U.S. Olympic Team, Kwik-Kold should be standard equipment for all football, basketball, and baseball teams as well as other athletic groups. For all sports injuries—sprains, black eyes, cuts and bruises—Kwik-Kold is handy and effective, indoors, outdoors, in all seasons.

New KWIK-KOLD belongs in the first aid kit of everyone who has to deal with sudden injuries. Get Kwik-Kold from your local first aid equipment supplier or write International Latex Corporation, 350 Fifth Avenue, New York 1, N. Y.



Kwik-Kold can be stored at any temperature, always ready for immediate use. Tough yet flexible plastic bag contains dry Cold-Crystals and an inner pouch of special fluid. When you squeeze bag, fluid is released to activate crystals and give *instant cold*. Apply as you would an ice pack. Bag measures 6" x 9", conforms smoothly to body contours, is not lumpy, messy, or drippy. Dispose of bag after use.

How Cold Works in the Treatment of Injuries:

Cold is medically recognized for its value in the treatment of various injuries. In *minor bleeding,* cold has an astringent action on tissues and constricts capillaries, thus acts to reduce blood flow at the site of the wound. By reducing effusion of blood to wound, cold helps reduce *swelling, inflammation, and discoloration* in bruises and sprains. The local anesthetic effect of cold helps *relieve pain.* And because it restricts blood flow to and from the wound, cold slows spread of venom in treating *insect and snake bites.*

(Circle number 761 for more information)

How To Use Cold in Emergency First Aid:

Sprains. Elevate injured part to a comfortable position. *Apply cold packs* to sprain to ease swelling and relieve pain.

Bruises, Black Eyes. Apply cold pack promptly to bruise for 20 to 25 minutes. Cold inhibits flow of blood to wound, helps limit discoloration, reduce swelling and pain.

Bleeding. In bleeding from the nose, the head should be kept erect, as lowering the head tends to encourage continued flow of blood. *Apply cold* to the nose, and if the bleeding is from near the tip of nose, pinch the nostrils together for a few minutes. In bleeding from cuts and abrasions, keep the area raised and *apply cold* in conjunction with other prescribed treatment.

Insect & Snake Bite: *For bee, wasp and hornet stings,* remove stinger with sterilized needle or knife point. *Apply cold* to sting to relieve pain and slow absorption of venom. Apply calamine lotion to relieve itching. *For ant, chigger and mosquito bites,* wash affected parts with soap and water, then apply paste of baking soda. *Apply cold* to reduce swelling. *For snake bite,* follow prescribed first aid procedure, *using cold* application on wound to relieve pain and help limit spread of venom.

Sunstroke. For mild sunstroke (marked by headache, fatigue, dizziness and, perhaps, fainting), cool patient off quickly. *Apply cold packs* to head to help lower body temperature.

Minor Burns. Follow recommended first aid procedures to exclude air from burned area and prevent contamination. *Apply cold packs* to relieve pain.

Other Uses. Cold packs may be considered for use in conjunction with other appropriate first aid measures in treating minor head injuries, suspected appendicitis, headache and fever, toothache, and fainting.

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(Circle number 773 for more information)

Secretarial desk

The Toledo Metal Furniture Co. is marketing a desk designed for secretarial practice and combination classrooms. It is equipped with a typewriter wing which can be detached.

The desk features an all-steel supporting base, leg and rail design to provide maximum rigidity and a plastic laminate top. Edges and corners are rounded.

For more information, circle number 848 on the Reader Service Card.

■ ■ ■

Projector has low profile

An overhead projector offered by the Charles Beseler Co. has a short supporting post and compact projection head which give it a low profile for front-of-the-room viewing. At maximum height, the projection head stands at 17½ inches, and the head itself measures six by seven inches.

The projection stage accepts 10 by 10 inch transparencies and throws a 1,000 watt image on screens as large as 13 by 13 feet.

For more information, circle number 860 on the Reader Service Card.

Full-light filmstrip viewer

A self-contained unit marketed by DuKane Corp. makes it possible to view filmstrips without darkening the room. Images are focused on its own 7- by 9-inch screen, satisfactory for individual or small group presentations.

Weighing 11 pounds including screen, the unit becomes portable when folded into an attached case. A device to rewind films and space for film storage are other features.

For more information, circle number 885 on the Reader Service Card.

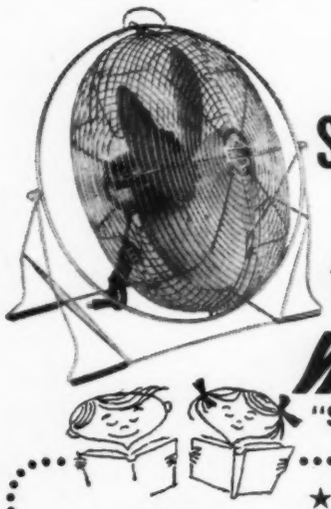
■ ■ ■

Heat control valve

A heat control valve produced by the Edwards Engineering Corp. permits fully zoned heat from a single circulator on the heating unit.

The valve has an electric motor with sealed and lubricated gear train, sealed mercury switches, and compact dimensions which permit installation within baseboard units. Automatic shut-off control prevents leakage of heat into rooms during periods when the areas are not in use.

For more information, circle number 840 on the Reader Service Card.



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The new AO Spencer Sixty has *all* the factors that mean real value and economy. It is a 100% American achievement with revolutionary improvements that make it the most advanced, most effective teaching microscope available. Yet it is priced, model for model, with all but the lowest "bargain-priced" instruments.

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You owe it to your school to investigate this remarkable microscope. Compare it with all others . . . then buy it with confidence.

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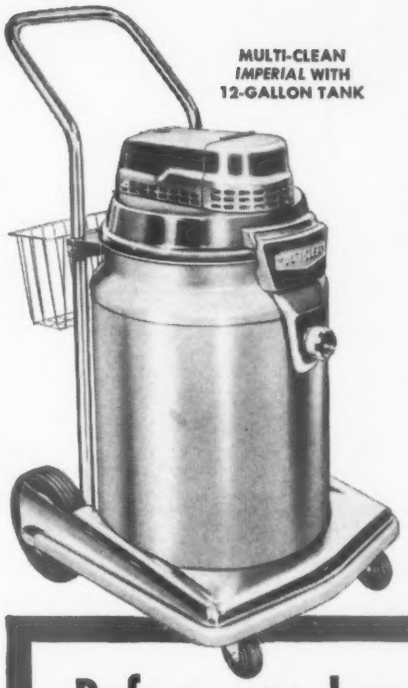

MULTI-CLEAN *IMPERIAL* WITH 12-GALLON TANK

Within the next year or two, your firm will probably purchase one or more Vacuum Cleaners. Before making your choice, there are certain points you should consider . . . certain questions you should ask the salesman:

How much suction will it produce?

To create the powerful suction needed for *complete pickup*, the heavy-duty turbines of the new Multi-Clean IMPERIAL pull in air at rates up to 216 miles per hour. By moving more cubic feet per minute . . . and at greater speed, more pickup power is obtained. IMPERIALS create suction up to 92″ waterlift with closed orifice, 73″ with ½″ opening!

At what speed does motor operate?

Special Multi-Clean built 1 and 1½ hp motors turn at only 12,000 rpm with no load, 9,550 rpm with full load . . . much slower than the speed at which most other motors must operate in order to create same suction. Therefore, much less motor wear.

Before you buy a Vacuum Cleaner ...ask the Salesman these questions

How often must we replace brushes?

Stabilized motor brushes are an exclusive, patented Multi-Clean feature. Tests show their average life is 1,000-1,500 operating hours vs. 250-500 hours for standard brushes.

Is the filter washable?

Multi-Clean's patented filter is made from a quick-drying *washable* synthetic fibre which won't rot or mildew.

Does tank have a gravity drain?

Multi-Clean IMPERIALS have a convenient non-clogging gravity drain. Makes it easy to empty tank without disturbing the head.

Does it have two casters?

The practically tip-proof IMPERIAL has 2 big wheels plus 2 casters (instead of the traditional 1). This greater stability is important, for a 17-gallon Vacuum Cleaner weighs about 300 lbs. when full.

Is the cable detachable?

30-foot, 3-conductor IMPERIAL cable has same twist lock connector as most Multi-Clean Floor Machines. If you wish, same cable can be used for both.

And what about other features?

Other important advantages you gain when you buy a Multi-Clean IMPERIAL: By-pass motor cooling system . . . automatic shut-off to protect motor from water . . . improved design of clamp which holds power head . . . large wheels which facilitate moving up and down stairs or from building to building . . . wide choice of attachments.

For more information on the new IMPERIAL Vacuum Cleaners, see your local Multi-Clean Distributor . . . or write directly to factory.

MULTI-CLEAN *IMPERIAL* WITH 5-GALLON TANK

MULTI-CLEAN *IMPERIAL* WITH 17-GALLON TANK

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(Circle number 736 for more information)

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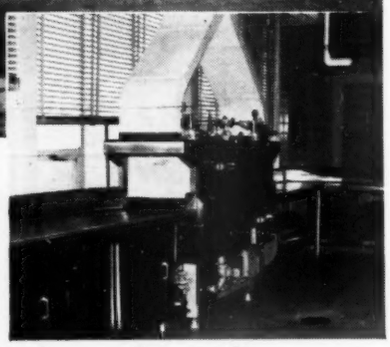

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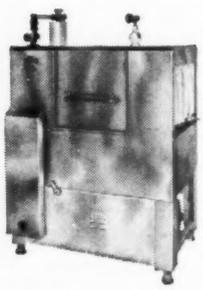

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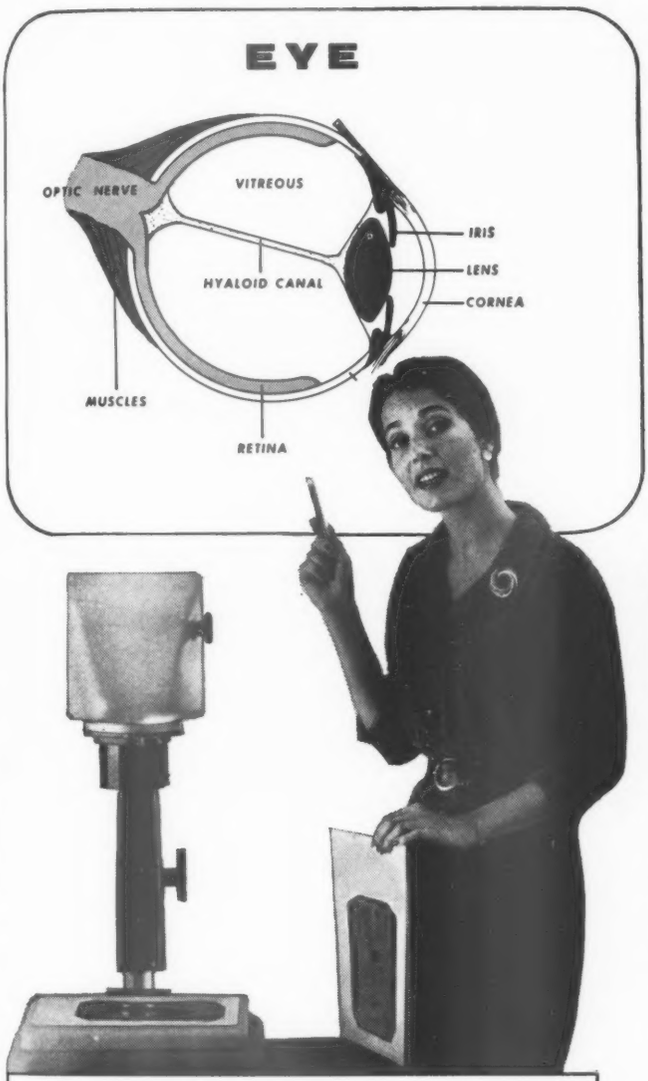

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